SUGAR BULLETIN No. 22.

DEPARTMENT OF AGRICULTURE,
BRITISH GUIANA.

FIELD EXPERIMENTS WITH SUGAR CANE XXII.

A REVIEW OF FERTILIZER AND MANURIAL EXPERIMENTS ON SUGAR CANE IN BRITISH GUIANA, 1930—1953.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, XIX.

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1953.

SUGAR CANE DISEASES IN BRITISH GUIANA.

THE "DAILY CHRONICLE," LTD., GEORGETOWN, DEMERARA.
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FIELD EXPERIMENTS WITH SUGAR CANE, XXII.

BY

L. S. BIRKETT, *Sugar Agronomist,*

AND

C. CAMERON, *Field Manager.*

INTRODUCTION.

This paper summarises the results of Field Experiments reaped during 1953. They consist of the following :—

Cane Variety Trials	59
Manurial Experiments	nil

The rainfall at the Sugar Experiment Station during 1953 was 12.6% above the average for the preceeding 32 years, the total for the year being 113.18 inches as compared with an annual average rainfall over the period 1921-1952, of 100.54 inches.

The monthly distribution of the rainfall in 1953 is compared with the monthly averages for the period 1921—1952 in Table I. It will be seen that the rainfall during the first half of the year was as much as 47.4% in excess of the 1921—1952 average for the same period, while that of the second half of the year was 28.1% less than the 1921—1952 average.

TABLE I.—**Comparison of the Monthly Rainfall at Sophia Sugar Experiment Station for 1953 with the Average for 1921—1952.**

Month.	Actual Rainfall, 1953. Inches.	Average Rainfall, 1921—1952. Inches.	Excess or Deficit Inches.
January 1953	17.14	10.38	6.76
February ,,	11.68	4.94	6.74
March ,,	10.52	4.54	5.98
April ,,	9.76	6.52	3.24
May ,,	19.92	12.69	7.23
June ,,	10.82	15.10	—4.28
July ,,	10.80	11.91	—1.11
August ,,	.86	7.56	—6.70
September ,,	5.16	2.89	2.27
October ,,	2.08	3.85	—1.77
November ,,	.73	5.85	—5.12
December ,,	13.71	14.31	— .60
Total	113.18	100.54	12.64

VARIETY TRIALS.

The results of the 1953 series of Variety Trials are presented and discussed under the following sub-heads :—

(a) Variety Sorting Trials ;

(b) Plant Cane Variety Trials ;

(c) First Ratoon Variety Trials ;

(d) Second Ratoon Variety Trials ;

(e) Variety Performance Summary ;

(f) General Summary and Recommendations.

SUB-SECTION A.—VARIETY SORTING TRIALS.

Two Variety Sorting Trials were reaped as Plants in 1953. They consist mainly of the Barbados 1948 series of seedlings. One was planted at the Sugar Experiment Station on Frontland Clay and the other at Pln. Uitvlugt on Pegassy Clay.

The two Sorting Trials of the Barbados 1947 series were also reaped as First Ratoons, and the three Sorting Trials of the Barbados 1946 series as Second Ratoons.

The more promising varieties from these trials are being further tested in large scale field trials.

The results of the three series of Sorting Trials *i.e.* 1946, 1947 and 1948, are summarised in Table II and are classified according to soil type and locality as follows :—

Soil Type and Locality.	*Index Nos. of Trials.*	*No. of Trials.*
Frontland Clay—Demerara	1, 3, 4, 51	4
Pegassy Clay	2, 5, 52	3

TABLE II.—**Results of a Plant Cane "Variety Sorting" Trial on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	Sophia, Field 8 West. Reaped 23.iii.53 at 14.00 months. Rainfall:—142.96 inches.						
	*B. 41227	50.38	15.53	89.5	7.82	144.55	
	B. 37161	46.24	14.19	90.2	6.56	121.26	
	B. 46378	47.64	13.65	88.0	6.50	120.15	
	D. 62/43	46.95	13.71	86.9	6.44	119.04	
	B. 48228	51.00	12.17	87.1	6.21	114.79	
	B. 48177	45.32	13.65	86.6	6.19	114.42	
	B. 48231	52.33	11.80	84.5	6.17	114.05	
	B. 4895	40.20	14.38	87.3	5.78	106.84	
	B. 48384	38.67	14.79	88.5	5.72	105.73	
	B. 48375	40.40	14.13	88.0	5.71	105.55	
	B. 4098	37.23	15.28	88.3	5.69	105.18	
	B. 4851	38.86	14.16	87.7	5.50	101.66	
MEANS OF 5 PLOTS:	B. 48330	37.57	14.18	89.5	5.33	98.52	51
	B. 4893	36.10	14.62	90.4	5.28	97.60	
	B. 48106 A	39.61	13.27	87.3	5.26	97.23	
	B. 48372	35.95	14.63	87.8	5.26	97.23	
	B. 4362	32.53	16.01	90.2	5.21	96.30	
	B. 48392	41.27	11.91	84.1	4.91	90.76	
	B. 4888	35.05	13.94	89.9	4.89	90.39	
	B. 48350	39.17	12.32	85.0	4.83	89.28	
	B. 48106 B	29.79	15.36	88.9	4.58	84.66	
	B. 4847	36.32	12.22	85.8	4.44	82.07	
	B. 4373	33.49	12.99	84.2	4.35	80.41	
	B. 48125	30.36	12.11	83.8	3.68	68.02	
	B. 48259	28.98	9.75	80.6	2.82	52.13	
	Mean:				5.41	100.00	
	Significant Difference, 20:1:				1.18	21.81	

* **Standard Cane.**

TABLE II. (Contd.)—**Results of a First Ratoon "Variety Sorting" Trial on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre,		Combined results for 2 Crops, Plants and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Sophia, Field 5 West. Reaped 13.v.53 at 12.75 months.								
	Rainfall :—138.82 inches.								
MEANS OF 4 PLOTS :	B.S. 4733	47.23	14.12	90.3	6.67	135.02	B.S. 4733	14.36	1
	B. 45137	45.68	14.50	89.4	6.63	134.21	B. 46378	13.49	
	B. 47162	43.95	14.61	91.0	6.42	129.96	B. 41227	13.48	
	B. 47258	36.89	16.67	91.5	6.15	124.49	B. 45137	13.35	
	B. 46378	41.86	14.66	88.1	6.13	124.09	B. 34104	13.27	
	*B. 41227	43.22	14.11	89.6	6.10	123.48	B. 46232	12.55	
	*B. 34104	40.20	14.46	91.1	5.81	117.61	B.S. 4711	12.46	
	B.S. 4711	37.71	15.38	88.7	5.80	117.41	B. 47256	11.98	
	B. 4755	41.42	13.62	88.2	5.64	114.17	B. 47162	11.97	
	B. 47256	42.98	12.67	89.2	5.45	110.32	B. 47419	11.90	
	B. 4504	37.37	14.40	90.4	5.38	108.91	B. 4755	11.71	
	B. 46232	33.65	15.50	90.9	5.21	105.47	B. 47258	11.63	
	B. 47419	31.84	16.19	90.6	5.15	104.25	B. 47306	11.60	
	B. 47298	36.59	13.96	93.0	5.11	103.44	B. 47135	11.26	
	B. 47135	34.05	14.88	90.2	5.07	102.63	B.S. 4747	11.10	
	B. 47379	36.55	13.85	90.6	5.06	102.43	B.S. 4724	10.88	
	B. 47314	35.04	14.36	90.9	5.03	101.82	B. 4504	10.68	
	B.S. 4724	38.10	13.17	88.9	5.02	101.62	B. 47204	10.57	
	B. 47151	38.38	12.90	86.7	4.95	100.20	B. 47151	10.55	
	B.S. 4747	34.94	13.74	89.4	4.80	97.17	B. 47379	10.49	
	B. 4530	36.58	12.87	88.2	4.74	95.95	B. 47179	10.40	
	B.S. 4710	32.80	14.06	88.7	4.61	93.32	B. 4530	10.13	
	B. 47306	35.58	12.91	87.1	4.59	92.91	B. 47147	10.10	
	B. 47179	34.81	13.07	78.3	4.55	92.11	B. 4788	9.96	
	B. 47214	31.40	14.39	91.4	4.52	91.50	B. 47314	9.90	
	B. 47397	29.65	14.64	87.7	4.34	87.85	B.S. 4710	9.79	
	B. 4788	26.88	15.56	89.5	4.18	84.62	B. 47298	9.77	
	B.S. 4743	30.07	13.75	87.9	4.13	83.60	B. 47214	9.70	
	B. 47147	31.78	12.96	85.2	4.12	83.40	B. 4764	9.44	
	B. 47204	32.38	12.68	88.3	4.11	83.20	B. 47217	9.30	
	B. 4764	25.38	15.97	91.3	4.05	81.98	B.S. 4743	9.24	
	B. 47262	32.85	12.07	84.6	3.96	80.16	B. 47397	9.19	
	B. 4765	29.86	13.11	85.4	3.92	79.35	B. 4765	9.03	
	B.S. 4738	26.87	13.63	89.9	3.66	74.09	B. 47262	8.77	
	B. 47217	28.65	12.70	90.9	3.64	73.68	B.S. 4738	8.14	
	B. 4668	23.95	13.47	90.4	3.23	65.38	B. 4668	6.61	
	Mean :				4.94	100.00			
	Significant Difference, 20 : 1 :				1.21	24.49			

Standard Cane.

TABLE II. (Contd.).—**Results of Second Ratoon "Variety Sorting" Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 13 East "B." Reaped 8.x.53 at 13.25 months. Rainfall :—135.59 inches.								
	B. 46288	45.06	13.89	88.5	6.26	126.46	B. 4699	18.27	
	*B. 41227	45.01	13.18	86.5	5.93	119.80	B. 41227	18.00	
	B. 4699	40.65	14.55	89.6	5.91	119.39	B. 46290	17.90	
	B. 4596	39.26	14.12	88.3	5.54	111.92	B. 46351	17.57	
	B. 4506	38.59	14.07	85.4	5.43	109.70	B. 46218	17.16	
	B. 46369	43.50	12.50	85.9	5.43	109.70	B. 46369	16.97	
	B. 46399	41.80	12.92	86.3	5.40	109.09	B. 4596	16.88	
	B. 46351	38.33	13.61	88.1	5.21	105.25	B. 46399	16.80	
MEANS OF 4 PLOTS :	B. 46218	34.38	15.06	87.6	5.17	104.44	B. 46230	16.36	
	B. 46290	39.78	12.32	86.1	4.90	98.99	B. 4506	16.03	3
	B. 46230	32.41	13.86	85.8	4.49	90.71	B. 46384	15.96	
	B. 46384	30.17	14.73	90.5	4.44	89.70	B. 4688	15.58	
	B. 46102	33.13	13.34	85.5	4.42	89.29	B. 46102	15.51	
	B. 4688	42.01	10.43	76.7	4.38	88.48	B. 46394	13.76	
	B. 46232	33.76	11.87	86.2	4.01	81.01	B. 46297	13.30	
	B. 46297	28.73	13.26	89.7	3.81	76.97	B. 46288 †	12.87	
	B. 46394	25.13	13.70	85.5	3.44	69.49	B. 46232 †	9.63	
	Mean :				4.95	100.00			
	Significant Difference, 20 : 1 :				1.25	25.25			
	Sophia, Field 13 East "A." Reaped 10.x.53 at 13.25 months. Rainfall :—136.47 inches.								
	B. 46378	55.36	14.41	87.5	7.98	130.39	B. 46378	24.81	
	B. 45151	54.38	13.35	87.4	7.26	118.63	B. 46340	21.72	
	B. 46103	55.58	12.52	88.3	6.96	113.73	B. 45270	20.81	
	B. 46340	43.43	15.94	88.8	6.92	113.07	B. 45151	20.52	
	B. 45270	46.25	14.72	89.3	6.81	111.27	M. 213/40	20.48	
	B. 45188	50.09	13.60	88.2	6.81	111.27	B. 45188	20.12	
	M. 213/40	51.35	13.11	86.8	6.73	109.97	B. 46103	20.00	
	*B. 41227	45.40	13.88	86.9	6.30	102.94	B. 41227	19.20	
MEANS OF 4 PLOTS :	B. 46136	41.58	14.94	89.3	6.21	101.47	M. 423/41	18.56	
	B. 46248	41.53	13.33	90.4	5.54	90.52	B. 46136	18.45	
	B. 46190	41.04	13.07	83.2	5.36	87.58	B. 46248	17.97	4
	B. 4572	31.14	15.71	89.2	4.89	79.90	B. 46190	17.82	
	M. 423/41	37.22	12.81	88.9	4.77	77.94	B. 45274	16.83	
	B. 45274	38.37	12.26	85.0	4.70	76.80	B. 4572	16.58	
	M. 134/32	35.64	12.73	86.9	4.53	74.02	M. 134/32	15.83	
	Mean :				6.12	100.00			
	Significant Difference, 20 : 1 :				1.29	21.08			

* **Standard Cane.**

† **Results for Plants and 2nd Ratoons only.**

TABLE II. (Contd.)—**Results of a Plant Cane "Variety Sorting" Trial on Pegassy Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Pln. De Kinderen, Field 73 De K. Reaped 9.iv.53 at 14.50 months. Rainfall:—125.68 inches.						
MEANS OF 5 PLOTS:	B. 48372	51.74	14.38	85.2	7.44	147.91	52
	B. 37161	45.22	14.85	90.7	6.71	133.40	
	B. 48375	46.45	14.04	87.1	6.52	129.62	
	*B. 41227	45.47	13.83	86.0	6.29	125.05	
	B. 48106 B	39.41	15.47	88.0	6.10	121.27	
	B. 48350	42.08	14.35	88.3	6.04	120.08	
	B. 48231	40.01	13.65	87.5	5.46	108.55	
	B. 4895	36.81	14.71	85.4	5.41	107.55	
	B. 48330	38.66	13.67	86.7	5.28	104.97	
	B. 48392	44.40	11.45	77.2	5.08	100.99	
	B. 48106 A	42.66	11.46	81.0	4.89	97.22	
	B. 48384	39.00	12.37	78.6	4.82	95.82	
	B. 48351	35.98	13.32	86.3	4.80	95.43	
	B. 48259	36.03	13.33	89.3	4.80	95.43	
	B. 4851	33.99	13.87	85.4	4.71	93.64	
	B. 48228	35.29	13.16	87.0	4.64	92.25	
	B. 48177	40.31	11.32	79.2	4.56	90.66	
	B. 4893	32.37	13.56	87.6	4.39	87.28	
	B. 4847	43.29	9.96	75.5	4.31	85.69	
	B. 48126	29.41	14.49	88.6	4.26	84.69	
	B. 4867	31.14	13.55	85.9	4.22	83.90	
	B. 48332	28.42	14.34	86.9	4.07	80.91	
	B. 48117	32.84	12.31	85.4	4.04	80.32	
	B. 4881	37.36	10.80	74.9	4.03	80.12	
	B. 48179	23.26	12.82	85.5	2.98	59.24	
	Mean:				5.03	100.00	
	Significant Difference, 20:1:				.93	18.49	

* **Standard Cane.**

TABLE II. (Contd.).—**Results of a First Ratoon "Variety Sorting" Trial on Pegassy Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Combined results for 2 Crops, Plants and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre. Tons.	
	Pln. Uitvlugt, Field 91 M.Z. West. Reaped 10.iv.53 at 12.25 months. Rainfall:—110.50 inches.								
	B. 45137	41.69	16.25	92.1	6.77	144.04	B. 47225	12.56	
	B. 47162	41.36	15.73	90.9	6.51	138.51	B. 46378	11.61	
	B. 46378	45.52	14.23	88.8	6.48	137.87	B. 47379	11.61	
	B. 47225	37.92	16.00	91.5	6.07	129.15	B. 45137	11.28	
	B. 47147	45.13	13.40	88.5	6.04	128.51	B. 4755	11.23	
	B.S. 4744	36.98	16.23	92.8	6.00	127.66	B. 47258	11.15	
	*B. 41227	37.99	15.61	90.6	5.93	126.17	B. 47147	11.02	
	B. 47258	36.82	15.94	90.7	5.87	124.89	B. 41227	10.38	
	B. 47379	44.36	13.13	85.6	5.82	123.83	B. 47298	10.06	
	B. 47419	38.13	14.68	90.4	5.60	119.15	B. 47162	9.75	
	B. 47298	38.51	13.84	90.7	5.33	113.40	B. 47216	9.50	
	B. 47306	38.47	13.56	87.6	5.21	110.85	B. 47256	9.43	
	B. 4755	38.19	13.61	89.2	5.20	110.64	B.S. 4733	9.06	
	B.S. 4733	35.54	14.59	89.8	5.18	110.21	B. 47419	9.04	
	B. 47216	37.20	13.40	90.4	4.98	105.96	B. 47214	8.74	
	B. 46339	31.59	15.38	91.1	4.86	103.40	B. 47306	8.55	
MEANS OF 4 PLOTS:	B. 4788	27.00	16.85	92.7	4.55	96.81	B.S. 4746	7.98	2
	B.S. 4711	28.78	15.74	95.7	4.53	96.38	B.S. 4744	7.44	
	B.S. 4746	31.98	14.00	86.9	4.47	95.11	B.S. 4743	7.39	
	B. 4781	28.63	14.75	89.2	4.22	89.79	B. 46339	7.37	
	B.S. 4743	32.82	12.72	81.1	4.18	88.94	B.S. 4711	7.18	
	B. 47256	39.58	10.51	81.1	4.16	88.51	B.S. 4724	7.15	
	B. 47214	30.79	13.40	89.8	4.13	87.87	B. 4788	7.06	
	B. 47151	29.22	14.02	87.5	4.09	87.02	B. 4781	6.99	
	B. 4764	25.50	15.78	89.5	4.02	85.53	B. 4765	6.99	
	B. 47314	26.09	15.34	90.4	4.00	85.11	B. 47151	6.91	
	B.S. 4724	27.68	13.69	86.4	3.79	80.64	B.S. 4710	6.67	
	B. 4765	23.60	15.50	90.9	3.66	77.87	B. 47314	6.62	
	B. 47204	27.81	12.96	84.4	3.60	76.60	B. 47179	6.61	
	B.S. 4747	30.11	11.80	79.8	3.55	75.53	B. 4764	6.19	
	B.S. 4710	27.71	12.28	84.4	3.40	72.34	B. 47135	5.59	
	B. 47179	26.63	12.60	83.1	3.35	71.28	B. 47204	5.04	
	B. 47135	22.06	14.15	88.8	3.12	66.38	B.S. 4747	5.00	
	B. 4530	29.33	10.08	78.5	2.95	62.77	B. 4530	4.84	
	B. 47399	22.29	13.13	88.7	2.93	62.34	B. 47399	4.74	
	Mean:				4.70	100.00			
	Significant Difference, 20:1:				1.12	23.83			

* **Standard Cane.**

TABLE II. (Contd.).—Results of a Second Ratoon "Variety Sorting" Trial on Pegassy Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons Sucrose in Cane per Acre, Tons.	Trial No.
Pln. De Kinderen, Field 13 West Tuschen. Reaped 20.viii.53 at 12.00 months. Rainfall :—109.04 inches.									
	B. 46378	36.41	14.07	88.7	5.12	151.93	B. 46369	16.35	
	B. 46369	32.54	14.25	88.5	4.64	137.69	B. 46378	15.49	
	B. 46351	34.86	13.30	88.7	4.64	137.69	B. 46351	15.30	
	*B. 41227	33.10	13.17	89.2	4.36	129.38	B. 45151	14.68	
	B. 4688	33.08	12.97	84.8	4.29	127.30	B. 46290	14.36	
	B. 45151	29.39	13.65	88.0	4.01	118.99	B. 41227	13.93	
	B. 46290	32.37	12.40	88.9	4.01	118.99	B. 46102	13.12	
	B. 4691	32.43	12.00	82.9	3.89	115.43	B. 46297	13.00	
	B. 46297	25.84	14.77	88.8	3.82	113.35	B. 4688	12.90	
	B. 46394	23.99	15.16	89.8	3.64	108.01	B. 4699	12.76	
	B. 4504	27.25	12.61	86.5	3.44	102.08	B. 46394	12.23	
	B. 4572	23.82	14.41	88.6	3.43	101.78	B. 46151	12.00	
MEANS OF 4 PLOTS:	B. 46151	24.96	13.33	90.5	3.33	98.81	B. 4668	10.79	
	B. 46102	24.17	13.45	89.7	3.25	96.44	B. 46340	10.07	
	B. 4604	22.04	14.36	88.2	3.16	93.77	B. 46281	9.82	5
	B. 4699	21.23	14.61	89.2	3.10	91.99	B. 4691 †	9.10	
	B. 4692	22.53	13.78	86.0	3.10	91.99	B. 4572 †	7.98	
	B. 4668	22.36	13.24	87.9	2.96	87.83	B. 4604 †	7.82	
	B. 46399	22.06	12.68	85.2	2.80	83.09	B. 46399 †	7.52	
	B. 46232	21.84	12.79	88.5	2.79	82.79	B. 4504 †	7.46	
	B. 46281	17.72	13.58	89.7	2.41	71.51	B. 46136	7.38	
	B. 46340	17.04	13.36	89.2	2.27	67.36	B. 46232	7.34	
	B. 46136	17.65	12.63	89.2	2.23	66.17	B. 4534 †	5.55	
	B. 4534	20.24	9.99	83.2	2.02	59.94	B. 4608 †	4.55	
	B. 4608	12.76	11.24	74.9	1.43	42.43	B. 4692 ††	3.10	
	Mean:				3.37	100.00			
	Significant Difference, 20 : 1 :				.90	26.71			

* **Standard Cane.**
† **These Varieties were reaped only as Plants and 2nd Ratoons.**
†† **This Variety was reaped only as 2nd Ratoon.**

B.—PLANT CANE VARIETY TRIALS.

Twenty-six variety trials were reaped at the Plant Cane stage during 1953. These are classified according to soil type and locality as follows :—

Soil Type and Locality.	*Index Nos. of Trials.*	*No. of Trials.*
Frontland Clay—Demerara	53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73.	21
Frontland Clay—Berbice	74, 75, 76, 77.	4
Riverside Clay	78.	1

TABLE III.—**Results of a Plant Cane Variety-Cultivation Trial (Deep Drill System—10ft. Beds) on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 3 East "A." Reaped 6.ix.53 at 14.75 months. Rainfall :—162.46 inches.						
MEANS OF 4 PLOTS:	D. 158/41	75.35	11.03	80.5	8.31	109.20	53
	D. 62/43	67.23	12.30	84.4	8.27	108.67	
	B. 4098	67.97	11.83	83.3	8.04	105.65	
	D. 142/41	64.17	12.23	83.9	7.85	103.15	
	B. 37161	66.76	11.36	83.2	7.58	99.61	
	*B. 41227	61.15	11.20	82.1	6.85	90.01	
	*B. 34104	54.82	11.66	83.5	6.39	83.97	
	Mean :	65.35	11.66	83.0	7.61	100.00	
	Significant Difference, 20 : 1 :				—	—	

* **Standard Cane.**

Results of a Plant Cane Variety-Cultivation Trial (Normal Estate System—3 Rod Beds) on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 3 East "B." Reaped 6.ix.53 at 14.75 months. Rainfall :—162.46 inches.						
MEANS OF 4 PLOTS:	D. 62/43	57.61	12.99	85.1	7.48	119.30	54
	*B. 41227	57.04	12.24	85.0	6.98	111.32	
	D. 158/41	56.14	12.35	85.2	6.93	110.53	
	B. 37161	48.10	12.67	87.0	6.09	97.13	
	B. 4098	47.78	11.99	85.0	5.73	91.39	
	*B. 34104	54.56	9.98	80.3	5.44	86.76	
	D. 142/41	42.38	12.35	84.5	5.23	83.41	
	Mean :	51.94	12.08	84.6	6.27	100.00	
	Significant Difference, 20 : 1 :				—	—	

* **Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre,		Trial No.
					Tons.	% Mean.	
	Sophia, Field 3 East. Reaped 13.iii.53 at 14.00 months. Rainfall :—136.37 inches.						
MEANS OF 5 PLOTS :	B. 45137	54.56	15.35	89.7	8.37	130.78	55
	B. 45151	48.80	15.27	90.2	7.45	116.41	
	B.S. 4733	53.19	13.94	89.1	7.42	115.94	
	*B. 41227	46.77	15.43	89.2	7.22	112.81	
	B. 4788	44.68	16.08	90.6	7.18	112.19	
	B. 47419	47.27	14.64	89.4	6.92	108.12	
	B. 46136	42.34	15.90	91.1	6.73	105.16	
	B. 46351	45.52	14.73	91.1	6.70	104.69	
	B. 37161	45.59	14.49	89.2	6.61	103.28	
	B. 47256	49.58	13.31	86.9	6.60	103.12	
	B. 4691	49.57	13.27	86.0	6.58	102.81	
	B. 47179	48.71	13.39	86.7	6.52	101.87	
	B. 46378	45.73	14.23	89.0	6.51	101.72	
	B. 46230	42.15	15.44	87.7	6.51	101.72	
	B. 47306	44.86	14.39	89.3	6.45	100.78	
	B. 4764	42.21	15.27	89.6	6.44	100.62	
	B. 47298	41.37	14.58	89.0	6.03	94.22	
	B.S. 4743	42.95	14.01	86.2	6.02	94.06	
	B. 4098	39.76	15.09	89.0	6.00	93.75	
	B. 47314	37.98	15.54	89.3	5.90	92.19	
	B.S. 4724	40.83	13.60	86.9	5.55	86.72	
	B. 47204	39.08	13.68	87.5	5.35	83.59	
	B. 4504	39.70	13.13	89.0	5.21	81.41	
	B. 47262	40.23	12.25	84.7	4.93	77.03	
	B. 4553	33.22	14.59	87.1	4.84	75.62	
	Mean :				6.40	100.00	
	Significant Difference, 20 : 1 :				1.37	21.41	

* **Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 11 West. Reaped 30.iii.53 at 13.25 months Rainfall :—132.40 inches.						
MEANS OF 5 PLOTS :	D. 127/45	61.13	12.87	86.4	7.87	135.69	56
	B. 37161	60.64	11.86	87.6	7.19	123.97	
	D. 133/45	50.80	13.74	88.4	6.98	120.34	
	D. 123/45	57.13	11.80	85.1	6.74	116.21	
	D. 131/45	51.83	12.87	87.1	6.67	115.00	
	D. 159/45	51.98	12.78	87.1	6.64	114.48	
	*B. 41227	52.24	12.45	86.6	6.50	112.07	
	D. 27/45	49.44	12.93	86.3	6.39	110.17	
	D. 8/45	49.96	12.59	86.2	6.29	108.45	
	D. 62/45	47.20	13.32	88.1	6.29	108.45	
	D. 145/45	56.44	10.87	80.9	6.13	105.69	
	D. 18/45	50.11	11.82	85.7	5.92	102.07	
	D. 118/45	49.32	11.88	82.9	5.86	101.03	
	D. 74/45	60.20	9.66	78.9	5.81	100.17	
	D. 121/45	48.87	11.48	83.1	5.61	96.72	
	D. 17/45	46.06	11.80	84.7	5.44	93.79	
	D. 172/45	48.63	10.85	84.7	5.28	91.03	
	D. 161/45	47.34	10.57	83.2	5.00	86.21	
	D. 48/45	38.28	12.93	87.6	4.95	85.34	
	D. 168/45	44.49	11.01	86.4	4.90	84.48	
	D. 143/45	53.13	9.05	77.8	4.81	82.93	
	D. 138/45	40.65	11.77	83.4	4.78	82.41	
	D. 160/45	54.54	8.49	80.8	4.63	79.83	
	D. 140/45	47.65	9.01	82.4	4.29	73.97	
	D. 165/45	39.24	10.04	79.9	3.94	67.93	
	Mean :				5.80	100.00	
	Significant Difference, 20 : 1 :				1.07	18.45	

* **Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	Sophia, Field 12 West. Reaped 10.iv.53 at 13.00 months. Rainfall :—132.24 inches.						
MEANS OF 5 PLOTS :	D. 153/45	55.39	12.41	87.0	6.87	119.69	57
	D. 127/45	47.82	13.91	87.4	6.65	115.85	
	D. 157/45	52.87	12.41	86.7	6.56	114.29	
	D. 135/45	48.46	13.49	88.5	6.54	113.94	
	*B. 41227	47.61	13.67	89.1	6.51	113.41	
	D. 150/45	48.14	13.50	86.0	6.50	113.24	
	D. 142/45	43.68	14.40	89.5	6.29	109.58	
	D. 137/45	51.55	12.01	85.5	6.19	107.84	
	D. 123/45	49.74	12.33	86.8	6.13	106.79	
	D. 151/45	50.88	11.87	84.7	6.04	105.23	
	D. 154/45	48.58	12.37	85.6	6.01	104.70	
	D. 146/45	45.74	13.12	88.0	6.00	104.53	
	D. 163/45	49.38	12.07	83.9	5.96	103.83	
	D. 125/45	45.41	12.48	87.1	5.67	98.78	
	D. 160/45	47.09	12.02	84.4	5.66	98.61	
	D. 143/45	51.57	10.77	84.3	5.55	96.69	
	D. 74/45	49.15	10.96	80.9	5.39	93.90	
	D. 149/45	44.89	11.90	85.6	5.34	93.03	
	D. 166/45	42.81	11.99	86.5	5.13	89.37	
	D. 169/45	38.88	13.11	87.7	5.10	88.85	
	D. 129/45	36.95	13.66	90.1	5.05	87.98	
	D. 165/45	42.49	11.47	82.2	4.87	84.84	
	D. 144/45	39.91	11.39	83.4	4.55	79.27	
	D. 120/45	33.08	11.80	82.7	4.49	78.22	
	D. 168/45	34.44	12.60	88.0	4.34	75.61	
	Mean :				5.74	100.00	
	Significant Difference, 20 : 1 :				.90	15.68	
	Sophia, Field 1 West "B." Reaped 1.x.53 at 13.00 months. Rainfall :—156.30 inches.						
MEANS OF 5 PLOTS :	*B. 41227	48.09	11.86	87.3	5.70	121.79	58
	B. 4765	41.84	12.47	87.3	5.22	111.54	
	B. 47397	42.84	11.35	85.0	4.86	103.85	
	B. 4755	39.99	11.15	84.9	4.46	95.30	
	B. 46339	35.67	12.18	86.7	4.34	92.73	
	B. 47216	39.22	10.50	86.3	4.12	88.03	
	B. 47225	38.33	10.62	83.1	4.07	86.97	
	Mean :				4.68	100.00	
	Significant Difference, 20 : 1 :				—	—	

* **Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 1 West "A." Reaped 5.x.53 at 13.00 months. Rainfall :—156.30 inches.						
MEANS OF 5 PLOTS :	D. 62/43	55.79	13.85	87.7	7.72	132.19	59
	*B. 41227	47.21	12.39	86.3	5.85	100.17	
	B. 4362	41.13	13.61	87.4	5.60	95.89	
	D. 70/46	37.50	13.77	88.0	5.16	88.36	
	B. 4788	39.25	12.42	87.3	4.87	83.39	
	Mean :				5.84	100.00	
	Significant Difference, 20 : 1 :				.99	16.95	
	Sophia, Field 1/4 West "B." Reaped 13.x.53 at 14.25 months. Rainfall :—143.94 inches.						
MEANS OF 4 PLOTS :	D. 259/46	59.41	13.21	86.2	7.85	124.41	60
	D. 106/46	50.53	14.80	87.0	7.48	118.54	
	*B. 41227	62.56	11.62	82.2	7.27	115.21	
	D. 264/46	58.90	10.18	79.7	6.00	95.09	
	D. 70/46	45.23	12.31	84.3	5.57	88.27	
	D. 121/46	50.28	10.65	81.7	5.35	84.79	
	D. 275/46	42.10	11.13	80.6	4.68	74.17	
	Mean :				6.31	100.00	
	Significant Difference, 20 : 1 :				1.34	21.24	
	Sophia, Field 1/4 West "A." Reaped 15.x.53 at 14.25 months. Rainfall :—143.94 inches.						
MEANS OF 4 PLOTS :	*B. 41227	55.92	14.06	87.5	7.86	112.61	61
	D. 39/46	62.32	12.56	87.2	7.83	112.18	
	D. 175/46	52.26	14.88	90.2	7.78	111.46	
	D. 92/46	52.76	14.70	88.2	7.75	111.03	
	D. 159/46	45.13	15.90	90.0	7.17	102.72	
	D. 157/46	47.98	13.40	86.6	6.43	92.12	
	D. 181/46	40.25	14.84	91.9	5.97	85.53	
	D. 188/46	39.96	12.69	86.3	5.07	72.64	
	Mean :				6.98	100.00	
	Significant Difference, 20 : 1 :				—	—	

* **Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 15 East "B." Reaped 30.x.53 at 12.75 months.						
	Rainfall :—126.49 inches.						
MEANS OF 4 PLOTS :	*B. 41227	54.72	13.10	86.8	7.17	123.83	62
	D. 150/46	44.90	13.84	87.0	6.21	107.25	
	D. 249/46	45.71	13.30	87.2	6.08	105.01	
	B. 37161	41.60	14.50	90.4	6.03	104.14	
	D. 277/46	42.81	14.01	86.9	6.00	103.63	
	D. 65/46	40.76	14.18	89.5	5.78	99.83	
	D. 100/46	39.75	14.18	89.3	5.63	97.24	
	D. 273/46	44.74	12.00	83.3	5.37	92.75	
	D. 183/46	38.50	13.07	87.4	5.03	86.87	
	D. 11/45	33.08	13.97	88.3	4.62	79.79	
	Mean :				5.79	100.00	
	Significant Difference, 20 : 1 :				1.25	21.59	
	Sophia, Field 15 East "A." Reaped 2.xi.53 at 12.75 months.						
	Rainfall :—126.00 inches.						
MEANS OF 4 PLOTS :	D. 141/46	57.49	16.26	88.9	9.35	141.45	63
	B. 37161	46.55	15.05	90.9	7.01	106.05	
	D. 49/46	52.56	13.29	84.2	6.98	105.60	
	*B. 41227	47.59	14.13	89.0	6.72	101.66	
	D. 106/46	42.05	15.78	88.2	6.63	100.30	
	D. 91/46	42.45	15.04	87.2	6.38	96.52	
	D. 280/46	38.72	15.42	88.4	5.97	90.32	
	D. 246/46	39.08	15.18	88.5	5.93	89.71	
	D. 96/46	41.94	13.86	84.5	5.81	87.90	
	D. 54/46	45.52	11.61	82.2	5.28	79.88	
	Mean :				6.61	100.00	
	Significant Difference, 20 : 1 :				1.39	21.03	

* **Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 14 East "B." Reaped 5.xi.53 at 12.75 months. Rainfall :—126.49 inches.						
MEANS OF 4 PLOTS :	*B. 41227	59.28	13.23	86.8	7.84	120.62	64
	D. 43/45	50.58	14.51	87.3	7.34	112.92	
	B. 37161	49.30	14.16	89.4	6.98	107.38	
	D. 20/45	48.29	13.68	88.0	6.61	101.69	
	D. 24/45	51.30	12.71	87.3	6.52	100.31	
	D. 139/46	44.91	14.38	88.0	6.46	99.38	
	D. 8/45	48.79	12.74	84.8	6.22	95.69	
	D. 152/46	50.21	12.27	83.8	6.16	94.77	
	D. 7/45	48.56	11.67	83.5	5.67	87.23	
	D. 14/45	39.06	13.42	86.5	5.24	80.62	
	Mean :				6.50	100.00	
	Significant Difference, 20 : 1 :				1.13	17.38	
	Sophia, Field 14 East "A." Reaped 7.xi.53 at 13.00 months. Rainfall :—126.49 inches.						
MEANS OF 4 PLOTS :	*B. 41227	52.63	15.03	89.3	7.91	118.41	65
	D. 146/46	50.09	15.60	88.7	7.81	116.92	
	D. 114/46	50.72	14.24	87.8	7.22	108.08	
	D. 158/46	51.51	13.48	86.8	6.94	103.89	
	B. 37161	46.65	14.49	88.6	6.76	101.20	
	D. 133/46	45.24	14.73	88.1	6.66	99.70	
	D. 157/46	44.84	14.08	86.1	6.31	94.46	
	D. 121/46	44.38	13.93	85.4	6.18	92.51	
	D. 159/46	37.13	15.33	88.4	5.69	85.18	
	D. 185/46	45.94	11.49	84.5	5.28	79.04	
	Mean :				6.68	100.00	
	Significant Difference, 20 : 1 :				1.16	17.37	
	Sophia, Field 11 East "B." Reaped 13.xi.53 at 12.50 months. Rainfall :—126.22 inches.						
MEANS OF 4 PLOTS :	*B. 41227	54.22	15.42	88.1	8.36	136.38	66
	D. 62/43	54.16	14.94	86.5	8.09	131.97	
	B. 48372	51.55	14.29	84.4	7.36	120.07	
	B. 48231	46.13	13.47	84.2	6.21	101.30	
	B. 48350	51.49	11.94	84.1	6.15	100.33	
	B. 46232	41.25	14.00	87.2	5.78	94.29	
	B. 4851	44.91	11.48	81.6	5.15	84.01	
	B. 4867	37.59	13.37	84.1	5.02	81.89	
	B. 48177	42.98	11.50	78.3	4.94	80.59	
	B. 48330	33.03	12.85	84.9	4.24	69.17	
	Mean :				6.13	100.00	
	Significant Difference, 20 : 1 :				1.19	19.41	

* **Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Cane. Pol. %	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 11 East "A." Reaped 18.xi.53 at 12.75 months. Rainfall :—126.74 inches.						
MEANS OF 4 PLOTS :	D. 62/43	56.25	13.90	85.7	7.82	131.21	67
	*B. 41227	51.29	13.97	86.1	7.16	120.13	
	B. 4893	51.07	13.96	88.2	7.13	119.63	
	B. 48126	48.61	13.33	86.3	6.48	108.72	
	B. 48228	47.98	12.49	84.4	5.99	100.50	
	B. 48392	47.62	12.25	81.5	5.83	97.82	
	B. 4847	48.28	12.05	83.2	5.82	97.65	
	B. 48106 A	43.68	11.40	81.7	4.98	83.56	
	B. 48259	40.84	11.75	83.4	4.80	80.54	
	B. 48351	45.16	8.07	76.8	3.64	61.07	
	Mean :				5.96	100.00	
	Significant Difference, 20 : 1 :				1.04	17.45	
	Sophia, Field 9 East "B." Reaped 20.xi.53 at 12.75 months. Rainfall :—126.32 inches.						
MEANS OF 4 PLOTS :	*B. 41227	54.84	14.09	87.8	7.73	124.88	68
	D. 62/43	53.81	13.45	84.2	7.24	116.96	
	B. 48372	53.34	13.39	84.4	7.14	115.35	
	B. 4847	50.71	12.79	83.7	6.49	104.85	
	B. 4893	41.81	14.95	88.3	6.25	100.97	
	B. 4895	44.34	13.94	85.2	6.18	99.84	
	B. 48228	45.79	12.16	81.7	5.57	89.98	
	B. 46232	41.37	12.90	85.9	5.34	86.27	
	B.S. 4733	43.28	11.74	83.1	5.08	82.07	
	B. 48106 B	34.21	14.33	84.6	4.90	79.16	
	Mean :				6.19	100.00	
	Significant Difference, 20 : 1 :				1.07	17.29	

* **Standard Cane.**

TABLE III. (Contd.).—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Sophia, Field 9 East "A." Reaped 25.xi.53 at 12.75 months. Rainfall :—126.60 inches.						
MEANS OF 4 PLOTS :	D. 62/43	58.75	14.08	84.3	8.27	130.44	69
	*B. 41227	55.68	13.80	85.4	7.68	121.14	
	B.S. 4744	50.53	14.07	86.4	7.11	112.15	
	B. 48384	49.38	14.11	85.7	6.97	109.94	
	B. 48375	42.23	14.74	85.9	6.22	98.11	
	B. 48125	43.56	13.39	86.3	5.83	91.96	
	B 4888	42.72	13.40	84.6	5.72	90.22	
	B. 48177	45.69	12.53	83.7	5.72	90.22	
	B. 4867	41.73	13.13	85.2	5.48	86.44	
	B. 48259	39.10	11.34	83.1	4.43	69.87	
	Mean :				6.34	100.00	
	Significant Difference, 20 : 1 :				1.42	22.40	
	Pln. Leonora, Field A.C.S. 45 C.J., Reaped 14.iv.53 at 15.00 months. Rainfall :—123.49 inches.						
MEANS OF 4 PLOTS :	B. 4098	65.81	12.41	82.9	8.16	137.84	70
	*B. 41227	55.75	13.94	87.4	7.77	131.25	
	B. 4764	55.90	13.87	86.1	7.75	130.91	
	B.S. 4743	53.57	12.47	81.7	6.68	112.84	
	B. 46136	49.38	12.99	83.4	6.42	108.45	
	B. 4504	49.98	12.82	83.5	6.41	108.28	
	B. 47306	54.77	11.67	83.4	6.39	107.94	
	B. 4553	45.97	13.50	83.8	6.20	104.73	
	B. 45151	47.98	12.53	84.5	6.01	101.52	
	B. 46351	46.46	12.65	84.1	5.88	99.32	
	B. 37161	46.69	11.90	82.8	5.55	93.75	
	B. 47262	44.38	11.05	78.7	4.90	82.77	
	B. 46230	38.71	12.55	83.6	4.85	81.93	
	B. 4691	48.69	9.90	75.3	4.82	81.42	
	B. 47179	50.67	8.33	72.5	4.22	71.28	
	B. 4668	26.23	10.24	73.9	2.68	45.27	
	Mean :				5.92	100.00	
	Significant Difference, 20 : 1 :				1.37	23.14	

* **Standard Cane.**

TABLE III. (Contd.).—Results of Plant Cane Variety Trials on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Pln. Ogle, Field 3 Industry. Reaped 5.xi.53 at 13.50 months. Rainfall :—98.24 inches.						
MEANS OF 5 PLOTS :	*B. 41227	50.85	15.10	87.0	7.68	125.70	71
	B. 37161	46.45	14.21	86.5	6.60	108.02	
	B. 47419	44.22	14.25	85.3	6.30	103.11	
	B. 48375	45.17	13.34	85.5	6.03	98.69	
	B.S. 4744	39.63	14.90	87.5	5.90	96.56	
	D. 18/46	39.21	14.65	85.8	5.74	93.94	
	B.S. 4724	40.62	13.24	83.9	5.38	88.05	
	B. 48384	35.03	14.98	84.1	5.25	85.92	
	Mean :				6.11	100.00	
	Significant Difference, 20 : 1 :				.81	13.26	
	Pln. Lusignan, Field 109 A.W. Reaped 17.xi.53 at 14.75 months. Rainfall :—117.64 inches.						
MEANS OF 5 PLOTS :	*B. 41227	46.78	16.01	90.3	7.49	125.67	72
	B. 46369	55.23	13.22	85.9	7.30	122.48	
	B.S. 4747	50.65	13.14	81.2	6.66	111.74	
	B.S. 4744	46.84	14.11	87.2	6.61	110.91	
	B.S. 4710	42.36	12.92	84.7	5.48	91.95	
	B. 37161	38.55	14.16	88.0	5.46	91.61	
	B. 47214	36.34	13.27	89.4	4.82	80.87	
	B. 4699	28.39	13.49	88.7	3.83	64.26	
	Mean :				5.96	100.00	
	Significant Difference, 20 : 1 :				.78	13.09	
	Pln. L.B.I., Field Brothers 13 Reaped 9.xii.53 at 12.75 months. Rainfall :—90.10 inches.						
MEANS OF 5 PLOTS :	*B. 41227	51.75	15.92	88.8	8.24	127.95	73
	B. 46351	43.28	14.70	87.0	6.36	98.76	
	B. 4688	46.74	13.36	85.0	6.25	97.05	
	B. 45151	43.70	14.08	86.8	6.15	95.50	
	B. 46232	41.57	14.21	87.9	5.91	91.77	
	B. 37161	42.08	13.59	87.6	5.72	88.82	
	Mean :				6.44	100.00	
	Significant Difference, 20 : 1 :				.74	11.49	

*** Standard Cane.**

TABLE III. (*Contd.*).—**Results of Plant Cane Variety Trials on Berbice Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
	Pln. Port Mourant, Field R.O.G. 9. Reaped 23.iv.53 at 14.25 months. Rainfall :—94.07 inches.						
	B. 37161	41.54	16.02	90.4	6.65	115.25	
	*B. 41227	41.57	15.98	88.4	6.64	115.08	
	B. 4788	38.67	16.86	90.9	6.52	113.00	
	B. 45151	40.61	15.80	87.2	6.42	111.27	
	B.S. 4747	40.78	15.27	85.0	6.23	107.97	
	B.S. 4733	39.80	15.48	86.1	6.16	106.76	
	B. 4691	35.79	16.30	85.4	5.83	101.04	
MEANS OF 4 PLOTS :	B. 46378	37.16	15.63	88.8	5.81	100.69	74
	B. 47179	37.98	15.08	85.4	5.73	99.31	
	B. 45137	37.16	15.39	89.7	5.72	99.13	
	B.S. 4724	38.77	14.26	81.5	5.53	95.84	
	B. 47314	32.10	17.06	90.6	5.47	94.80	
	B. 47298	32.08	16.80	89.3	5.39	93.41	
	B. 47204	32.99	14.84	84.7	4.90	84.92	
	B. 4506	30.39	15.64	85.1	4.75	82.32	
	B. 47147	30.10	15.22	87.9	4.58	79.38	
	Mean :				5.77	100.00	
	Significant Difference, 20 : 1 :				—	—	
	Pln. Rose Hall, Field 37 S. Reaped 29.iv.53 at 14.25 months. Rainfall :—110.85 inches.						
	B. 47256	45.87	13.30	82.9	6.10	131.18	
	B. 46103	37.17	14.64	87.8	5.44	116.99	
	B. 46308	40.35	13.03	79.6	5.26	113.12	
	*B. 41227	44.65	11.69	81.8	5.22	112.26	
	B.S. 4747	43.73	11.59	81.6	5.07	109.03	
	B. 46218	38.29	12.79	85.4	4.90	105.38	
	B. 45156	38.39	12.39	81.4	4.75	102.15	
MEANS OF 4 PLOTS :	B. 4553	34.94	13.31	82.9	4.65	100.00	75
	B. 37161	37.08	12.29	87.2	4.56	98.06	
	B. 46384	37.65	12.01	81.1	4.52	97.20	
	B. 46295	37.07	12.15	81.6	4.50	96.77	
	B. 46378	32.41	13.65	81.0	4.42	95.05	
	B. 46190	36.78	11.88	80.7	4.37	93.98	
	B. 46144	33.16	11.37	83.4	3.77	81.08	
	B. 4502	27.66	13.14	78.0	3.63	78.06	
	B. 4681	26.62	12.11	82.2	3.22	69.25	
	Mean :				4.65	100.00	
	Significant Difference, 20 : 1 :				.97	20.86	

* **Standard Cane.**

TABLE III. (Contd.).—Results of Plant Cane Variety Trials on Berbice Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Trial No.
Pln. Rose Hall, Field Prospect 2. Reaped 8.xii.53 at 13.75 months. Rainfall :—106.24 inches.							
MEANS OF 5 PLOTS :	B. 47258	45.16	15.91	87.9	7.19	128.85	76
	B. 4098	45.13	13.51	87.9	6.10	109.32	
	B. 4764	44.29	13.72	86.1	6.08	108.96	
	B. 47379	42.54	13.72	87.8	5.84	104.66	
	*B. 41227	40.83	13.67	87.0	5.58	100.00	
	B. 47419	36.63	13.07	86.5	4.79	85.84	
	B. 47262	40.91	11.29	82.1	4.62	82.80	
	B. 47151	37.08	12.07	84.9	4.48	80.29	
	Mean :				5.58	100.00	
	Significant Difference, 20 : 1 :				1.25	22.40	
Pln. Albion, Field N. 15 W.S. Reaped 30.xii.53 at 15.50 months. Rainfall :—95.35 inches.							
MEANS OF 5 PLOTS :	*B. 41227	61.18	14.28	83.5	8.74	116.22	77
	B. 37161	63.30	13.49	86.9	8.54	113.56	
	B.S. 4744	64.31	13.12	83.9	8.44	112.23	
	B. 47419	58.22	13.67	84.8	7.96	105.85	
	D. 19/46	54.68	13.95	86.3	7.63	101.46	
	D. 18/46	50.06	13.14	90.2	6.58	87.50	
	B.S. 4733	51.17	12.81	84.6	6.55	87.10	
	B.S. 4724	53.18	10.76	81.5	5.72	76.06	
	Mean :				7.52	100.00	
	Significant Difference, 20 : 1 :				.98	13.03	

Results of a Plant Cane Variety Trial on Riverside Clay.

Pln. Farm, Field 61 Prospect. Reaped 3.xi.53 at 14.25 months. Rainfall :—125.02 inches.

MEANS OF 5 PLOTS :	B.S. 4710	48.14	12.65	86.3	6.09	115.12	78
	*B. 41227	44.24	13.61	89.4	6.02	113.80	
	B.S. 4744	40.74	13.76	90.3	5.61	106.05	
	B.S. 4747	46.70	11.65	79.4	5.44	102.84	
	B.S. 4724	44.24	12.12	84.1	5.36	101.32	
	B.S. 4733	40.99	12.27	88.0	5.03	95.08	
	B. 47214	36.08	12.32	89.2	4.45	84.12	
	B. 37161	37.49	11.63	84.4	4.36	82.42	
	Mean :				5.29	100.00	
	Significant Difference, 20 : 1 :				.61	11.53	

* Standard Cane.

C.—FIRST RATOON VARIETY TRIALS.

Seventeen First Ratoon Variety Trials were reaped in 1953. They are classified as follows :—

Soil Type and Locality.	*Index Nos. of Trials.*	*No. of Trials.*
Frontland Clay—Demerara	6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 79.	12
Frontland Clay—Berbice	17, 18, 19.	3
Riverside Clay	20, 21.	2

TABLE IV.—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons, Variety.	Combined Results for 2 Crops, Plants and 1st Ratoons, Sucrose in Cane per Acre, Tons.	Trial No.
Sophia, Field 16 East "B." Reaped 23.iv.53 at 13.00 months. Rainfall :—134.70 inches.									
MEANS OF 4 PLOTS :	D. 94/45	31.30	16.41	91.2	5.13	122.73	B. 41227	12.25	6
	*B. 41227	31.29	15.47	88.9	4.84	115.79	D. 94/45	11.77	
	D. 56/45	28.93	16.11	90.8	4.66	111.48	D. 18/45	11.25	
	D. 87/45	26.58	16.12	90.5	4.28	102.39	D. 56/45	11.17	
	D. 14/45	27.41	14.69	90.0	4.03	96.41	D. 87/45	10.87	
	D. 19/45	26.46	15.08	89.1	3.99	95.45	D. 43/45	10.33	
	D. 43/45	27.46	14.31	88.1	3.93	94.02	D. 19/45	10.32	
	D. 18/45	28.11	13.75	90.1	3.86	92.34	D. 8/45	9.52	
	D. 8/45	22.97	16.23	90.7	3.73	89.23	D. 30/45	9.13	
	D. 30/45	21.08	15.95	91.2	3.36	80.38	D. 14/45	8.91	
	Mean:				4.18	100.00			
	Significant Difference, 20: 1:				—	—			
Sophia, Field 16 East "A." Reaped 27.iv.53 at 13.00 months. Rainfall :—134.82 inches.									
MEANS OF 4 PLOTS :	D. 123/45	33.52	15.44	88.6	5.17	120.79	B. 41227	13.41	7
	*B. 41227	34.84	14.41	86.1	5.02	117.29	B. 44111	10.24	
	D. 3/44	29.21	14.92	88.7	4.36	101.87	D. 123/45	9.96	
	B. 44111	29.30	14.09	89.3	4.13	96.50	B. 40105	9.88	
	B. 44182	23.12	15.46	88.0	3.57	83.41	D. 3/44	9.81	
	B. 40105	21.81	15.67	88.6	3.41	79.67	B. 44182	9.23	
	Mean:				4.28	100.00			
	Significant Difference, 20: 1:				.96	22.43			
Sophia, Field 10 West "B." Reaped 29.iv.53 at 12.00 months. Rainfall :—128.94 inches.									
MEANS OF 4 PLOTS :	*B. 41227	49.43	14.93	89.2	7.38	112.33	B. 41227	14.13	11
	D. 123/45	48.83	14.81	87.5	7.23	110.05	D. 123/45	13.60	
	D. 4/43	45.85	15.16	88.7	6.95	105.78	D. 4/43	13.32	
	D. 3/44	45.34	14.87	86.4	6.74	102.59	B. 4373	12.99	
	B. 4373	42.35	14.43	83.8	6.11	93.00	B. 46378	12.04	
	D. 40/43	39.24	14.93	87.1	5.86	89.19	D. 3/44	11.79	
	B. 46378	44.64	12.74	86.4	5.69	86.61	D. 40/43	11.14	
	Mean:				6.57	100.00			
	Significant Difference, 20: 1:				1.13	17.20			

* **Standard Cane.**

TABLE IV. (Contd.).—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined Results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
Sophia, Field 10 West "A." Reaped 1.v.53 at 12.25 months. Rainfall :— 145.12 inches.									
MEANS OF 4 PLOTS :	*B. 41227	55.17	14.71	88.9	8.11	124.39	B. 41227	15.34	10
	B. 4688	54.62	13.91	86.4	7.60	116.56	B. 46232	14.55	
	B. 46351	47.06	14.70	86.1	6.92	106.13	B. 4688	14.51	
	B. 46369	48.11	12.73	86.6	6.12	93.86	B. 46351	14.32	
	B. 46297	45.96	12.66	86.1	5.82	89.26	B. 46369	14.16	
	B. 46232	47.97	12.14	89.1	5.82	89.26	B. 46297	13.17	
	B. 46151	41.47	12.62	87.9	5.23	80.21	B. 46151	12.42	
	Mean :				6.52	100.00			
	Significant Difference, 20 : 1 :				.80	12.27			
Sophia, Field 10 East "B." Reaped 5.v.53 at 13.00 months. Rainfall :—141.55 inches.									
MEANS OF 4 PLOTS :	D. 141/46†	40.20	15.89	89.0	6.39	127.04	D. 133/46	10.96	8
	†D. 277/46	38.21	16.15	88.1	6.17	122.66	B. 41227	10.41	
	D. 133/46	39.94	15.43	89.4	6.16	122.47	D. 17/46	9.70	
	*B. 41227	39.50	13.94	89.9	5.51	109.54	D. 18/46	9.69	
	D. 18/46	35.52	15.43	89.2	5.48	108.95	D. 244/46	8.31	
	†D. 1/46	35.60	15.23	89.7	5.42	107.75	D. 245/46	8.26	
	D. 290/46†	30.66	17.29	90.1	5.30	105.37	D. 139/46	7.76	
	D. 17/46	31.39	14.92	90.1	4.68	93.04			
	D. 244/46	32.87	13.97	84.1	4.59	91.25			
	†D. 267/46	37.57	12.08	84.6	4.54	90.26			
	D. 280/46†	30.80	14.57	89.3	4.49	89.26			
	†D. 113/46	30.71	14.42	90.1	4.43	88.07			
	D. 271/46†	30.59	14.02	86.0	4.29	85.29			
	D. 245/46	27.83	14.46	84.7	4.02	79.92			
	D. 139/46	27.18	14.66	89.6	3.98	79.13			
	Mean :				5.03	100.00			
	Significant Difference, 20 : 1 :				.60	11.93			
Sophia, Field 10 East "A." Reaped 8.v.53 at 13.00 months. Rainfall :—142.13 inches.									
MEANS OF 3 PLOTS :	*B. 41227	48.33	13.81	86.0	6.67	145.00	B. 41227	11.90	9
	D. 233/46	43.18	13.78	89.0	5.95	129.35	D. 233/46	11.09	
	D. 180/46	35.45	13.13	89.0	4.65	101.09	D. 180/46	9.09	
	D. 162/46	36.26	12.45	88.4	4.52	98.26	D. 146/46	8.78	
	D. 146/46	38.79	11.37	84.1	4.41	95.87	D. 162/46	8.61	
	D. 119/46	31.76	13.05	88.2	4.14	90.00	D. 20/46	8.60	
	D. 20/46	33.79	12.09	89.0	4.09	88.91	D. 119/46	8.34	
	D. 177/46	32.60	11.55	84.7	3.77	81.96	D. 238/46	8.17	
	D. 238/46	27.33	11.64	83.6	3.18	69.13	D. 177/46	7.87	
	Mean :				4.60	100.00			
	Significant Difference, 20 : 1 :				.96	20.87			

† **Not Reaped as Plants.**

* **Standard cane.**

TABLE IV. (Contd.).—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Combined Results for 2 Crops, Plants and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Sophia, Field 13 West "B." Reaped 17.x.53 at 13.50 months. Rainfall :—119.36 inches.								
MEANS OF 5 PLOTS :	D. 62/45	50.30	14.43	90.5	7.26	114.33	D. 29/46	14.35	12
	D. 39/46	52.84	13.19	89.0	6.97	109.76	D. 39/46	14.22	
	D. 145/45	50.03	13.83	86.2	6.92	108.98	D. 250/46	13.95	
	D. 29/46	50.26	13.48	89.1	6.77	106.61	D. 184/46	13.83	
	D. 184/46	43.82	14.72	92.2	6.45	101.57	D. 62/45	13.76	
	D. 247/46	46.09	13.44	88.8	6.19	97.48	B. 41227	13.72	
	D. 87/45	45.33	13.45	89.4	6.10	96.06	D. 247/46	12.84	
	*B. 41227	46.94	12.99	87.7	6.10	96.06	D. 145/45	12.74	
	D. 152/46	50.75	11.81	86.0	5.99	94.33	D. 87/45	12.28	
	D. 250/46	43.23	13.14	84.3	5.69	89.61	D. 152/46	11.67	
	D. 65/45	37.39	14.40	94.8	5.38	84.72	D. 65/45	10.60	
	Mean :				6.35	100.00			
	Significant Difference, 20 : 1 :				—	—			
	Sophia, Field 13 West "A." Reaped 23.x.53 at 13.50 months. Rainfall :—140.17 inches.								
MEANS OF 5 PLOTS :	*B. 41227	49.24	13.09	87.5	6.45	108.95	B. 41227	14.26	13
	B. 44341	41.25	15.50	89.1	6.39	107.94	B. 43349	13.48	
	D. 2/46	43.66	14.37	87.0	6.28	106.08	D. 43/45	13.32	
	D. 14/45	42.47	14.64	89.7	6.22	105.07	D. 14/45	13.21	
	D. 43/45	44.75	13.59	89.1	6.08	102.70	D. 2/46	13.17	
	D. 11/45	38.86	15.49	90.7	6.02	101.69	D. 11/45	13.06	
	B. 43349	49.50	11.72	83.4	5.80	97.97	B. 44341	12.87	
	D. 20/45	43.03	13.46	87.8	5.79	97.80	D. 173/45	12.31	
	D. 173/45	40.84	14.08	87.9	5.75	97.13	D. 20/45	12.29	
	D. 8/46	42.47	12.52	83.2	5.32	89.86	D. 8/45	12.08	
	D. 8/45	42.23	11.90	82.0	5.02	84.80	D. 8/46	10.82	
	Mean :				5.92	100.00			
	Significant Difference, 20 : 1 :				—	—			
	Sophia, Field 16 West Reaped 27.xi.53 at 12.00 months. Rainfall :—129.29 inches.								
MEANS OF 4 PLOTS :	B. 47258	33.98	16.81	91.4	5.71	145.66	B. 47258	11.91	79
	B. 45137	31.53	15.93	90.6	5.02	128.06	B. 37161	10.14	
	B. 46378	31.21	15.02	88.5	4.69	119.64	B. 47419	10.07	
	B. 37161	31.66	14.66	89.8	4.64	118.37	B. 45137	10.05	
	B. 47419	28.80	15.64	93.0	4.50	114.80	B. 47399	9.96	
	B. 47256	33.08	13.49	87.8	4.46	113.78	B. 46378	9.84	
	*B. 41227	27.97	15.10	89.1	4.22	107.65	B.S. 4743	9.82	
	B. 47399	26.83	15.19	90.7	4.08	104.08	B. 4765	9.70	
	B. 47314	24.58	16.12	92.0	3.96	101.02	B. 47135	9.62	
	B. 4764	24.76	15.91	89.5	3.94	100.51	B. 4764	9.60	
	B. 47204	23.95	16.06	90.6	3.85	98.21	B. 41227	9.44	
	B. S. 4743	24.88	15.14	88.6	3.77	96.17	B. 4788	9.22	
	B. 47135	26.58	14.08	87.9	3.74	95.41	B. 47314	9.13	
	B. S. 4746	23.66	15.44	90.4	3.66	93.37	B. 47256	9.03	
	B. 47262	26.75	13.67	88.3	3.66	93.37	B. 47147	9.02	
	B. 4788	23.51	15.52	90.1	3.65	93.11	B. S. 4733	8.61	
	B.S. 4724	25.42	14.37	90.2	3.65	93.11	B. 47204	8.37	
	B. 4765	21.78	16.28	91.3	3.55	90.56	B. 47298	8.35	
	B. 47214	23.10	15.14	92.1	3.50	89.29	B.S. 4724	8.35	
	B. 46232	23.51	14.88	90.5	3.50	89.29	B.S. 4747	8.31	
	B.S. 4747	24.25	14.45	89.4	3.50	89.29	B. 47214	7.85	
	B.S. 4733	28.54	12.03	86.5	3.43	87.50	B. 46232	7.59	
	B. 47298	21.46	15.40	91.3	3.30	84.18	B. 47262	7.57	
	B. 47147	23.81	13.67	87.8	3.25	82.91	B. S. 4746	7.23	
	B. 4530	19.90	13.42	89.9	2.67	68.11	B. 4530	6.54	
	Mean :				3.92	100.00			
	Significant Difference, 20 : 1 :				.68	17.35			

* **Standard Cane.**

TABLE IV. (Contd.).—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants, and 1st Ratoons. Variety.	Combined Results for 2 Crops, Plants, and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. L.B.I., Field A55 C.M. Reaped 19.viii.53 at 11.75 months. Rainfall :—88.34 inches.								
MEANS OF 5 PLOTS:	D. 37/45	34.72	12.97	88.8	4.50	115.38	B. 41227	8.69	14
	B. 43413	34.79	12.52	86.5	4.35	111.54	D. 37/45	8.66	
	*B. 41227	31.71	13.62	88.7	4.32	110.77	B. 4373	8.60	
	B. 4373	33.41	12.93	83.3	4.32	110.77	B. 43413	8.54	
	B. 43214	30.47	14.04	86.7	4.28	109.74	B. 43214	8.24	
	B. 46378	29.86	14.56	86.3	3.04	77.95	B. 46378	5.92	
	B. 37161	22.35	11.17	84.5	2.50	64.10	B. 37161	5.33	
	Mean:				3.90	100.00			
	Significant Difference, 20 : 1 :				.82	21.03			
	Pln. Lusignan, Field 62 M.X.E. Reaped 18.viii.53 at 12.00 months. Rainfall :— 113.70 inches.								
MEANS OF 5 PLOTS:	*B. 41227	37.36	13.50	87.7	5.04	103.70	B. 4466	11.52	15
	B. 4466	40.22	12.35	87.2	4.97	102.26	B. 43413	11.08	
	B. 43413	41.13	11.12	81.1	4.57	94.03	B. 41227	10.64	
	B. 44111	34.67	13.16	86.4	4.56	93.83	B. 44111	10.12	
	*B. 34104	31.23	13.36	88.0	4.17	85.80	B. 34104	9.09	
	Mean:				4.86	100.00			
	Significant Difference, 20 : 1 :				—	—			
	Pln. Lusignan, Field G.H.E. 26 "B." Reaped 1.x.53 at 13.25 months. Rainfall :— 119.36 inches.								
MEANS OF 5 PLOTS:	D. 37/45	47.25	14.52	87.2	6.87	112.99	D. 37/45	14.36	16
	B. 4362	46.25	14.52	88.0	6.71	110.36	B. 43214	13.24	
	B. 43214	49.85	12.87	84.5	6.42	105.59	B. 4362	13.22	
	B. 4373	45.66	13.38	84.2	6.11	100.49	B. 4373	13.01	
	B. 37161	39.75	14.80	88.6	5.88	96.71	D. 4/43	12.34	
	*B 41227	42.88	13.61	87.2	5.84	96.05	B. 37161	12.16	
	D. 4/43	41.69	13.80	86.8	5.75	94.57	B. 41227	11.25	
	B. 46378	39.86	12.75	84.3	5.08	83.55	B. 46378	10.84	
	Mean:				6.08	100.00			
	Significant Difference, 20 : 1 :				—	—			
	Results of First Ratoon Variety Trials on Berbice Frontland Clay.								
	Pln. Albion, Field Hampshire 2. Reaped 8.xii.53 at 14.09 months. Rainfall :— 90.21 inches.								
MEANS OF 4 PLOTS:	B. 37161	54.37	13.90	80.4	7.55	135.79	B. 41227	14.64	17
	*B. 41227	50.88	14.32	81.5	7.28	130.94	B. 37161	13.91	
	B. 4699	42.66	14.16	80.4	6.04	108.63	B. 46369	12.63	
	B. 46103	41.21	14.10	83.6	5.81	104.50	B. 46351	11.70	
	B. 46340	37.57	15.35	80.1	5.77	103.78	B. 46297	10.96	
	B. 46297	39.81	14.25	80.4	5.67	101.98	B. 46340	10.70	
	B. 46369	51.71	10.64	74.7	5.50	98.92	B. 4699	10.64	
	B. 46351	42.35	12.50	76.2	5.29	95.14	B. 46151	10.64	
	B. 46151	40.58	12.93	78.6	5.25	94.42	B. 46103	10.55	
	B. 46102	40.78	12.77	77.2	5.21	93.70	B. 46102	10.06	
	B. 46290	40.75	12.16	78.2	4.95	89.03	B. 46394	9.73	
	B. 46394	35.04	13.83	80.2	4.86	87.23	B. 46290	9.71	
	B. 46378	37.34	12.19	75.6	4.55	81.83	B. 46378	9.68	
	B. 4688	37.96	10.79	73.3	4.09	73.56	B. 4688	9.41	
	Mean:				5.56	100.00			
	Significant Difference, 20 : 1				1.09	19.60			

*** Standard Cane.**

TABLE IV. (Contd.).—**Results of First Ratoon Variety Trials on Berbice Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Combined Results for 2 Crops, Plants and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Pln. Port Mourant, Field R.E. 6 W.S. Reaped 2.iv.53 at 13.25 months. Rainfall :— 89.16 inches.								
MEANS OF 5 PLOTS:	*B. 41227	44.50	12.80	82.7	5.70	121.54	B. 41227	13.20	18
	D. 37/45	41.87	12.14	82.0	5.08	108.32	D. 37/45	12.29	
	B. 43413	44.37	10.28	74.2	4.56	97.23	B. 43413	12.27	
	B. 43214	32.79	13.78	85.5	4.52	96.38	B. 4373	11.41	
	B. 4373	33.30	13.42	82.6	4.47	95.31	B. 43214	11.14	
	B. 44341	27.20	13.93	84.9	3.79	80.81	B. 44341	9.35	
	Mean:				4.69	100.00			
	Significant Difference, 20: 1:				.83	17.70			
	Pln. Rose Hall, Field Reliance 82. Reaped 19.iii.53 at 12.75 months. Rainfall :— 109.16 inches.								
MEANS OF 5 PLOTS:	D. 62/43	44.83	12.51	84.5	5.61	111.09	B. 41227	12.95	19
	B. 44165	39.80	13.81	87.6	5.50	108.91	B. 44165	12.29	
	*B. 41227	46.98	11.44	81.8	5.37	106.34	D. 62/43	12.13	
	B. 43413	45.02	10.26	77.8	4.62	91.49	B. 43413	10.45	
	B. 4373	39.05	10.66	78.1	4.16	82.38	B. 4373	10.33	
	Mean				5.05	100.00			
	Significant Difference, 20: 1:				—	—			
	Results of First Ratoon Variety Trials on Riverside Clay.								
	Pln. Diamond, Field 23/5 G.D. Reaped 26.viii.53 at 11.75 months. Rainfall :—120.26 inches.								
MEANS OF 5 PLOTS:	D. 37/45	44.51	13.17	88.8	5.86	113.57	D. 37/45	13.97	20
	B. 43413	39.03	13.80	88.5	5.38	104.26	B. 4098	13.81	
	B. 4098	35.41	14.51	90.0	5.14	99.61	B. 43413	12.94	
	*B. 41227	38.11	11.86	88.4	4.52	87.60	B. 41227	12.65	
	B. 4373	35.74	12.30	83.5	4.40	85.27	B. 4373	11.59	
	B. 37161	27.69	13.99	88.7	3.87	75.00	B. 37161	10.31	
	B. 46378	28.46	11.79	82.1	3.35	64.92	B. 46378	9.79	
	Mean:				5.16	100.00			
	Significant Difference, 20: 1:				.55	10.66			
	Pln. Diamond, Field 116 W.S. Reaped 1.xii.53 at 11.75 months. Rainfall :— 111.23 inches.								
MEANS OF 4 PLOTS:	*B. 41227	52.20	15.02	88.9	7.84	130.23	B. 37161	14.59	21
	B. 37161	50.49	14.65	89.4	7.40	122.92	B. 41227	14.44	
	B. 4699	45.37	15.65	90.1	7.10	117.94	B. 46351	13.96	
	B. 4688	51.65	13.21	84.4	6.82	113.29	B. 4688	13.36	
	B. 46351	46.53	14.30	86.8	6.65	110.47	B. 4699	12.07	
	B. 46369	47.03	13.26	86.4	6.23	103.49	B. 45151	11.97	
	B. 4691	45.37	13.32	84.1	6.04	100.33	B. 46369	11.86	
	B. 46297	38.83	15.50	88.9	6.01	99.83	B. 46151	11.66	
	B. 46378	44.03	13.42	85.8	5.91	98.17	B. 46297	11.64	
	B. 45151	39.71	14.53	88.4	5.77	95.85	B. 46378	11.58	
	B. 46290	42.52	13.56	87.5	5.76	95.68	B. 4691	11.42	
	B. 46151	36.08	14.95	90.8	5.39	89.53	B. 46290	11.19	
	B. 46340	33.01	15.54	89.4	5.13	85.22	B. 46340	10.74	
	B. 46394	33.75	15.03	89.6	5.07	84.22	B. 4668	10.40	
	B. 4668	35.85	13.92	86.0	4.99	82.89	B. 46394	10.18	
	B. 4608	35.70	11.67	79.0	4.16	69.10	B. 4608	9.16	
	Mean:				6.02	100.00			
	Signicant Difference, 20: 1:				.80	13.29			

*** Standard Cane.**

D.—SECOND RATOON VARIETY TRIALS.

Nine Variety Trials were reaped as Second Ratoons in 1953. They are classified as follows :—

Soil Type and Locality.	*Index Nos. of Trials.*	*No. of Trials.*
Frontland Clay—Demerara	23, 24, 25, 26, 80, 81.	6
Frontland Clay—Berbice	27, 28.	2
Pegassy Clay	29.	1

TABLE V.—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 9 West "B." Reaped 26.x.53 at 13.50 months. Rainfall :—140.19 inches.								
MEANS OF 4 PLOTS :	D. 54/43	52.44	13.90	85.8	7.29	126.78	D. 62/43	21.00	23
	D. 37/45	41.46	15.59	86.9	6.46	112.35	D. 54/43	21.00	
	D. 62/43	43.30	14.70	88.1	6.36	110.61	D. 37/45	19.88	
	D. 27/45	39.70	15.01	88.0	5.96	103.65	D. 27/45	18.63	
	D. 27/44	35.33	15.08	86.5	5.33	92.70	B. 41227	16.97	
	*B. 41227	38.54	13.63	87.7	5.25	91.30	D. 27/44	16.62	
	D. 18/45	31.69	14.77	88.4	4.68	81.39	D. 9/46†	10.78	
	D. 9/46	33.03	14.11	87.3	4.66	81.04	D. 18/45†	10.54	
	Mean:				5.75	100.00			
	Significant Difference, 20: 1:				1.09	18.96			
	Sophia, Field 9 West "A." Reaped 28.x.53 at 13.50 months. Rainfall :—140.19 inches.								
MEANS OF 4 PLOTS :	D. 62/43	41.23	15.22	87.2	6.27	116.98	D. 62/43	20.57	24
	D. 4/43	35.49	16.37	89.4	5.81	108.40	D. 4/43	18.87	
	B. 4214	31.48	16.81	89.3	5.29	98.69	B. 41227	17.44	
	D. 14/46	34.38	15.23	89.1	5.23	97.57	B. 4214	15.55	
	*B. 41227	35.13	14.54	86.3	5.11	95.34	D. 14/46	15.46	
	B. 43413	31.74	14.06	85.8	4.46	83.21	B. 43413	15.04	
	Mean:				5.36	100.00			
	Significant Difference, 20: 1:				.75	13.99			
	Sophia, Field 5 East "B." Reaped 3.xii.53 at 12.75 months. Rainfall :—135.58 inches.								
MEANS OF 4 PLOTS :	D. 37/45	51.04	15.58	88.4	7.95	131.62	D 37/45	23.83	25
	D. 149/41	44.32	15.21	87.6	6.74	111.59	D. 150/46	20.60	
	D. 275/46	37.90	16.07	86.5	6.09	100.83	D. 275/46	20.31	
	D. 150/46	39.76	15.03	86.6	5.98	99.01	D. 183/46	20.15	
	D. 261/46	39.43	14.92	86.6	5.88	97.35	B. 41227	19.85	
	D. 183/46	35.06	15.81	91.4	5.54	91.72	D. 149/41†	15.40	
	*B. 41227	39.82	13.87	84.2	5.52	91.39	D. 261/46†	11.83	
	D. 277/46	36.44	14.72	85.6	5.36	88.74	D. 175/46†	11.80	
	D. 175/46	35.24	15.10	87.9	5.32	88.08	D. 277/46†	11.79	
	Mean:				6.04	100.00			
	Significant Difference, 20: 1:				1.26	20.86			

† **Results for Plants and 2nd Ratoons only.**

* **Standard Cane.**

TABLE V. (Contd.).—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Sophia, Field 5 East "A." Reaped 7.xii.53 at 12.50 months. Rainfall :—131.66 inches.								
MEANS OF 4 PLOTS :	D. 37/45	47.73	14.90	87.9	7.11	119.30	D. 37/45	24.89	26
	*B. 41227	44.20	15.53	88.8	6.87	115.27	D. 49/46	23.01	
	D. 49/46	46.73	14.37	87.5	6.72	112.75	B. 41227	22.21	
	D. 91/46	37.39	15.83	87.8	5.92	99.33	D. 100/46	19.72	
	D. 100/46	36.34	16.01	89.6	5.82	97.65	B. 43349	19.28	
	D. 96/46	37.52	14.53	88.4	5.45	91.44	D. 121/46	19.17	
	D. 121/46	35.50	14.00	86.5	4.97	83.39	D. 91/46†	13.53	
	B. 43349	36.88	13.13	85.2	4.84	81.21	D. 96/46†	12.45	
	Mean :				5.96	100.00			
	Significant Difference, 20 : 1 :				.91	15.27			

† **Results for Plants and 2nd Ratoons only.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre,		† Combined Results for 2 Crops, Plants, and 2nd Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Pln. L.B.I., Field 51 W. Success, Reaped 12.viii.53 at 11,50 months. Rainfall :—126.09 inches.								
MEANS OF 5 PLOTS :	D. 158/41	38.95	13.99	88.1	5.45	112.37	D. 158/41	14.25	80
	B. 44111	33.35	15.95	89.7	5.32	109.69	B. 44111	12.18	
	D. 4/43	34.36	14.04	89.5	4.82	99.38	B. 41227	11.49	
	*B. 41227	35.05	13.68	88.7	4.79	98.76	B. 43253	11.11	
	B. 43253	27.72	15.89	89.5	4.41	90.93	B. 40105	11.11	
	B. 40105	34.27	12.51	88.2	4.29	88.45	D. 4/43	11.09	
	Mean :				4.85	100.00			
	Significant Difference, 20 : 1 :				.71	14.64			

† **First Ratoons reaped by Estate.**

* **Standard Cane.**

TABLE V. (Contd.).—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
Pln. Enmore, Field H.E. 27. Reaped 12.iii.53 at 15.00 months. Rainfall :—114.51 inches.									
MEANS OF 5 PLOTS :	B. 4098	51.48	13.39	85.8	6.89	109.19	B. 4448	20.30	81
	D. 158/41	52.02	12.19	87.1	6.34	100.48	B. 4098	19.98	
	B. 4448	48.94	12.67	82.5	6.20	98.26	B. 44341	19.55	
	*B. 34104	46.02	13.27	86.5	6.11	96.83	D. 158/41	18.31	
	B. 44341	49.75	12.06	84.7	6.00	95.09	B. 34104	17.87	
	Mean :				6.31	100.00			
	Significant Difference, 20 : 1 :				—	—			
Results of Second Ratoon Variety Trials on Berbice Frontland Clay.									
Pln. Albion, Field 47A. Reaped 11.xi.53 at 14.25 months. Rainfall :—112.31 inches.									
MEANS OF 5 PLOTS :	B. 4214	40.81	15.17	86.3	6.19	119.73	B. 43413	19.36	27
	D. 54/43	40.28	13.52	82.7	5.44	105.22	D. 54/43	18.75	
	*B. 41227	35.94	14.52	80.9	5.22	100.97	B. 4373	18.27	
	B. 43413	38.69	13.44	75.4	5.20	100.58	B. 4214	18.21	
	B. 4373	37.83	13.66	79.6	5.17	100.00	D. 62/43	16.59	
	*B. 34104	31.49	15.41	85.4	4.85	93.81	B. 41227	15.88	
	B. 44279	31.65	14.80	86.1	4.69	90.72	B. 34104	15.86	
	D. 62/43	36.98	12.41	79.1	4.59	88.78	B. 44279	15.78	
	Mean :				5.17	100.00			
	Significant Difference, 20 : 1 :				.70	13.54			
Pln. Port Mourant, Field 34 Res. Emp. Reaped 22.iv.53 at 13.00 months. Rainfall :—122.02 inches.									
MEANS OF 5 PLOTS :	B. 44111	44.92	14.63	86.6	6.57	107.35	B. 41227	22.01	28
	B. 4448	40.99	15.54	87.4	6.37	104.08	B. 44111	21.07	
	B. 43253	39.22	15.98	88.2	6.27	102.45	B. 4448	20.52	
	*B. 41227	42.46	14.38	85.3	6.10	99.67	B. 44244	20.08	
	B. 44341	37.91	15.97	88.5	6.05	98.86	B. 43253	19.21	
	B. 44244	41.14	14.50	86.0	6.00	98.04	B. 44165	17.86	
	B. 44165	37.89	14.49	88.1	5.49	89.71	B. 44341	17.82	
	Mean :				6.12	100.00			
	Significant Difference, 20 : 1				—	—			
Results of a Second Ratoon Variety Trial on Pegassy Clay.									
Pln. Wales, Field 7 Sisters. Reaped 16.iii.53 at 12.00 months. Rainfall .—105.23 inches.									
MEANS OF 5 PLOTS :	*B. 41227	30.52	13.85	88.3	4.23	124.78	D. 62/43	12.69	29
	D. 62/43	30.70	13.30	88.1	4.08	120.35	B. 41227	11.52	
	B. 43253	19.83	14.13	88.1	2.80	82.60	B. 43253	10.09	
	D. 4373	20.92	11.79	82.8	2.47	72.86	B. 4373	9.73	
	Mean :				3.39	100.00			
	Significant Difference, 20 : 1 :				—	—			

* **Standard Cane.**

E.—VARIETY PERFORMANCE SUMMARY.

Varieties under test in 1953 are discussed under the following captions :—

(1) Standard Canes.

(2) Barbados and Demerara Seedlings produced prior to the 1944 Series.

(3) Barbados and Demerara Seedlings of the 1944, 1945 and 1946 Series.

(4) Barbados Seedlings of the 1947 Series.

(5) Barbados Seedlings of the 1948 and 1949 Series.

1. Standard Canes.

B.37161 (B.3365 x B.603)

Trial Nos. : 14, 16, 17, 20, 21, 51, 52, 53, 54, 55, 56, 62, 63, 64, 65, 70, 71, 72, 73, 74, 75, 77, 78, 79.

B.37161 continues to be used as a standard, especially on the pegassy clays. Except on this latter soil type it is not considered to be as reliable a standard as B.41227 however, and in general in tests it is somewhat inferior to B.41227 in yield of sugar per acre. This difference is not indicated by *average* estates yields however, probably owing to a relatively high percentage of the acreage in this variety being on areas to which it is ideally suited, *i.e.* pegassy clays.

B.37161 is recumbent in habit and usually produces long thick stems. Its Pol. content is very variable relative to B.41227 and this is probably dependent upon the age of the cane at time of reaping, rainfall, and drainage conditions, although from the experiments reaped to date it has not been possible to obtain any significant correlation between these factors and the variability in cane quality relative to B.41227.

Where the juice quality is poor, this is frequently (but not necessarily always) associated with rotting of the tops which may actually fall off. Under normal climatic conditions in British Guiana, it appears that B.37161 should not be allowed to exceed twelve months age.

B.37161 appears to perform particularly well along the Demerara River banks and in many areas on the West Coast Demerara estates.

B.41227 (B.35207 x P.O.J. 2878)

Trial Nos. : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21; 23 to 29; 51 to 80.

The general performance of this variety both in trials and in commercial plantings continues to be satisfactory. The very dry period extending from

August to December, 1953, has demonstrated that this variety when three to five months of age does not stand up to such conditions as well as was anticipated. In addition, during this period of dry weather, leaf scald disease was more noticeable in this variety than formerly although the degree of infection based on leaf scald symptoms is less than might be expected from a variety rated as tolerant to susceptible to this disease.*

B.41227 possesses stems of average diameter and has a recumbent habit. It yields well both as plants and as ratoons and arrows lightly and late in the Autumn. It continues to be a good commercial cane suited both to clay and normal pegasse soils. Its juice quality is generally good.

2. Barbados and Demerara Seedlings Produced Prior to the 1944 Series.

B.34104 (Co. 281 x B.H. 10/12).

Trial Nos. : 1, 15, 27, 53, 54, 81.

This variety still occupied 49.3% of the area reaped in 1953. There has been little replanting however, owing to its being very susceptible to leaf scald disease and to the fact that some of the newer cane varieties are definitely superior to it. Good yields are nevertheless obtained in some areas, notably at Versailles and Skeldon estates. Its ability to give good yields as ratoons is the chief feature favouring its retention on some estates but against this is the fact that it is a dangerous source of leaf scald infection of newer varieties which but for the presence of B.34104 in fields adjacent to those in the new varieties might usefully serve the local sugar industry for many years pending the discovery of a high-yielding leaf scald resistant variety. The early replacement of B.34104 by varieties more resistant to leaf scald disease is highly desirable.

B.4098 (B.3439 x Co. 290).

Trial Nos. : 20, 51 to 55, 70, 76, 81.

B.4098 has been sufficiently tested against B.41227 to allow of assessing it reasonably accurately against this standard. In twelve reapings as Plants, the standard has outyielded it on seven occasions, twice significantly. As First Ratoons, B.41227 outyielded it in four out of seven reapings, twice significantly and as Second Ratoons in three out of five reapings, twice significantly. In only two reapings has B.4098 outyielded the standard by margins that are statistically significant. It is therefore in general inferior to B.41227 in yield of sugar per acre, although in estates cultivations it appears to approach the standard in areas particularly suited to it. B.4098 is however, equal to the standard in Pol. % Cane although the juice is reported to give trouble to clarify occasionally. This is partly owing to the fact that this variety contains a relatively low P_2O_5 content in the juice as compared with B.41227.

B.4098 continues to be fairly heavily attacked by borer. Owing to its resistance to leaf scald disease, B.4098 has a definite place in commercial planting programmes but on the basis of the variety trials reaped to date, the leaf scald resistant variety B.4373, appears likely to prove a close rival.

* The terms used for rating cane varieties in regard to their resistance to Leaf Scald disease are as described in Bulletin No. 20, page 55, and this Bulletin.

B.4214 (B.3365 x Co. 290).

Trial Nos. : 24, 27.

This variety is to be further tested against B.41227.

B.4362 (B.37161 x P.O.J. 2878).

Trial Nos. : 16, 51, 59.

Originally rated as susceptible to leaf scald disease, this variety was accordingly not placed in many variety trials against B.41227. It is now regarded as tolerant to this disease and therefore will be tested more widely.

B.4362 is semi-recumbant to recumbent in habit with stems of average diameter. It arrows sparingly as Plants but somewhat more heavily as Ratoons and frequently produces numerous late tillers. In spite of this, B.4362 possesses a sucrose content appreciably above the average for British Guiana. It appears likely to be a moderately satisfactory all round cane, somewhat inferior to B.41227 in yield of sugar per acre. A more accurate assessment of its value must, however, await the results of further trials although from its tests against B.34104 it may be regarded as a promising commercial variety particularly on pegassy and riverside clays. It is recommended for moderate extension on these soils.

B.4373 (B.3354 x Co. 290).

Trial Nos. : 11, 14, 16, 18, 19, 20, 27, 29, 51.

This variety has been reaped in nine experiments as Plants, in eight as First Ratoons, and twice as Second Ratoons against B.41227. It has out-yielded this standard in three trails as Plants, twice significantly; in four as First Ratoons, once significantly, while as Second Ratoons it has in one case equalled the standard in yield but has been significantly outyielded in the other. On the whole, it has given fairly consistent results on clays up to First Ratoons but has been insufficiently tested on pegasse and as Second Ratoons.

B.4373 is erect in habit with stems of average diameter and arrows slightly in the Autumn. The Pol. % Cane is about the same as B.41227 and it appears to be a promising leaf scald resistant variety. It is to be further tested particularly on pegasse and also to determine its ability to ratoon satisfactorily. B.4373 is recommended for moderate extension on the sugar estates.

B.43214 (B.3353 x Co. 290)

Trial Nos. : 14, 16, 18.

Now rated as tolerant to susceptible to leaf scald disease, B.43214 is to be further tested against B.41227.

B.43253 (B.3439 x B.37175).

Trial Nos. : 28, 29, 80.

This variety is to be further tested. It possesses a juice considerably above average in quality but the yield of cane and of Pol. per acre is below that of B.41227. However, B.43253 is resistant to leaf scald disease and may prove a a very suitable cane for those estates with an ample supply of land but having a factory of low capacity.

B.43413 (M.D. 47 x Co. 290)

Trial Nos. : 14, 15, 18, 19, 20, 24. 27.

Reaped against B.41227 in eight trials as Plants and First Ratoons, and in four as Second Ratoons, B.43413 has on the whole been consistent. On the basis of these trials it is about equal to B.41227 on clays in yield of sugar per acre. It has not yet been reaped on pegassy soils and no data as to its behaviour on these are available at present.

The Pol. % Cane is in general somewhat less than that of B.41227 but not greatly so. B.43413 is tolerant to leaf scald disease and it is recommended for moderate extension on clay soils.

D.142/41 (B.34104 x Co. 213)

Trial Nos. : 53, 54.

This variety is grown on a limited scale on some estates. It is very susceptible to leaf scald disease however, and it cannot therefore be recommended to the sugar industry in spite of its suitability to certain soils.

D.158/41 (Co. 421 x D.166/34).

Trial Nos. : 53, 54, 80, 81.

This variety is being further tested against B.41227. On the commercial scale it has given high yields on some areas. It is tolerant to leaf scald disease.

D.4/43 (D.200/36 x Diamond 10).

Trial Nos. : 11, 16, 24, 80.

D.54/43 (Co. 421 x D.166/34)

Trial Nos. : 23, 27.

D.58/43 (Co. 421 x Co. 331)

These varieties are very vigorous growers. With the exception of D.58/43 which is susceptible to leaf scald disease they are being further tested against B.41227.

D.62/43 (Co. 421 x Co. 331)

Trial Nos. : 19, 23, 24, 27, 29, 51, 53, 54, 59, 66, 67, 68, 69.

This cane variety continues to consistently outyield the standard, B.41227, in variety experiments. In sixteen reapings as Plants it has outyielded this standard eleven times, six times significantly, while in seven reapings as First Ratoons the standard has been outyielded six times, twice significantly. As Second Ratoons, D.62/43 has outyielded B.41227 in four out of six reapings, two significantly. In only one reaping has it been significantly outyielded by B.41227.

D.62/43 possesses, under conditions in British Guiana, a higher than average Pol. % Cane. In habit it is erect or semi-erect, possessing stems of average diameter. It germinates readily and covers in very quickly. It however arrows heavily in the Autumn and should be reaped at twelve to thirteen months age as it does not carry over well. As D.62/43 is rated as being very susceptible to leaf scald disease, this otherwise outstanding cane variety cannot unfortunately be recommended for further extension in commercial plantings.

3. Barbados and Demerara Seedlings of the 1944, 1945 and 1946 Series.

B.44279 (B.37161 x B.3337)

Trial No. : 27.

B.44279 is to be further tested against B.41227.

B.45137 (B.38272 x B.34104)

Trial Nos. : 2, 55, 74, 79.

This variety which is tolerant to leaf scald disease shews promise and is being further tested against B.41227.

B.45188 (B.3354 x B.34104)

Trial No. : 4.

B.45188 is resistant to leaf scald disease and is to be further tested.

In addition, B.4596, B.45270, B.45274, B.46218 and B.46290 are to be further tested. The promising varieties, B.45151 and B.46369 have been found to be susceptible to leaf scald disease and will not be placed in future trials.

D.37/45 (B.34104 x Co. 331)

Trial Nos. : 16, 20, 23, 25, 26.

D.37/45 continues to give consistent results in trials. In seven reapings as Plants against B.41227, it outyielded the standard on four occasions, twice significantly. In a similar number of First Ratoon reapings, B.41227 was outyielded in all but one instance, four significantly. In four reapings as Second Ratoons, the standard was outyielded in three, twice significantly. Only once in eighteen reapings has B.41227 outyielded D.37/45 by a margin that is statistically significant. In general, this variety in trials has yielded approximately

10% more sugar per acre than B.41227 and is therefore a variety that is worthy of moderate extension on a field scale.

D.37/45 is a vigorous grower on clays and ratoons strongly. It has not been sufficiently tested on pegasse for an opinion to be given as to its suitability to this soil type. It possesses a juice of good quality and a Pol. % Cane slightly better than B.41227. It arrows heavily in the Autumn.

D.37/45 is rated as tolerant to susceptible to leaf scald disease but two estates in Berbice have reported it to be shewing under certain conditions a higher percentage infection to this disease than either B.41227 or B.37161. Its behaviour in this connection is being carefully watched.

D.27/45 and **D.49/46** have shewn promise in trials at Sophia Experiment Station and will be further tested in trials on estates.

B.46351 (B.35206 x P.O.J. 2878)

Trial Nos. : 3, 5, 10, 17, 21, 55, 70, 73.

This variety which shews promise on certain areas has given variable results. It is being further tested in an attempt to determine the soil types and conditions to which it is best suited. Its juice is generally below average as Plants but up to average as Ratoons.

B.46378 (B.35247 x B.3337)

Trial Nos. : 1, 2, 4, 5, 11, 14, 16, 17, 20, 21, 51, 55, 74, 75, 79.

B.46378 has now been reaped against B.41227 in fifteen trials as Plants, in eleven as First Ratoons and in two as Second Ratoons. As Plants it has outyielded the standard on five occasions, twice significantly, and has itself been outyielded on ten occasions, four significantly. In eleven reapings as First Ratoons it has outyielded the standard five times, none significantly, and has itself been outyielded six times, five significantly. As Second Ratoons it has outyielded B.41227 in both reapings to date, once significantly. The performance of this variety is therefore variable. B.46378 almost invariably gives heavy tonnages of cane and much of the variation in yield of sugar is the result of variation in cane quality relative to B.41227. The same comments as those for B.37161 are applicable in this connection.

B.46378 possesses a recumbent habit with stems of average or above average diameter. It arrows slightly in the Autumn and like B.37161 the tops tend to rot under certain conditions, particularly where the drainage is unsatisfactory and the cane allowed to become over-ripe. It appears to yield more consistently and to give better juices on pegassy clays. On average, B 46378 is about equal to B.41227 in Pol. % Cane but is inferior to the standard cane in yield on clays although it's equal on pegasse. It ratoons well, is a very vigorous grower and is tolerant to leaf scald disease. It is recommended for moderate extension on estates.

4. Barbados Seedlings of the 1947 Series.

B.47258, B.47225, B.S.4744, B.47399, B.47379, B.47162 and *B.S.4711* are to be further tested against B.41227.

The first two seedlings appear to be the most promising of the B.'47 series, although the B.47225 does not appear to spring back well if cut in wet weather.

B.47258 has yielded well as Plants and appears to possess a juice of good quality in spite of a tendency for the buds to sprout before the cane has attained maturity. Further tests are required however, before the general behaviour of these newer varieties can be assessed.

Further testing of the promising seedling **B.47419** will not be undertaken owing to its being found to be susceptible to leaf scald disease.

5. Barbados Seedlings of the 1948 and 1949 Series.

Few seedlings of the 1948 series shew any promise although **B.48372** is to be further tested.

Two Sorting Trials of the 1949 series are scheduled for reaping in 1954. In addition, **B.49388** which multiplied very rapidly is in a further three normal field trials and **B.4942, B.4946, B.49122, B.49354, B.49377** and **B.49380** are each in one normal field trial. Comments on the seedlings of this series must be reserved for later.

TABLE VI.—**Correlated Mean Sucrose Yields in Tons per Acre from all Experiments.**

Variety.	Plants.		First Ratoons.		Second Ratoons.		Total Yield.	Total Yield. B. 41227 = 100.00
	Yield.	No. of Expts.	Yield.	No. of Expts.	Yield.	No. of Expts.		
				Three Crops, Plants, First and Second Ratoons.				
B. 4466	7.82	6	6.49	4	8.27	2	22.58	126.07
B. 43214	7.51	5	6.44	5	7.24	2	21.19	118.31
D. 54/43	8.44	10	6.38	10	6.37	10	21.19	118.31
D. 37/45	7.90	10	6.71	10	6.23	6	20.84	116.36
D. 62/43	7.89	28	6.96	17	5.92	15	20.77	115.97
D. 158/41	8.16	18	6.50	12	5.78	12	20.44	114.13
B. 4362	7.50	12	6.39	10	5.94	9	19.83	110.72
D. 142/41	7.51	22	6.84	16	5.26	16	19.61	109.49
D. 123/45	6.71	5	6.32	3	6.51	1	19.54	109.10
B. 43413	7.75	13	5.98	13	5.76	7	19.49	108.82
D. 4/43	7.42	9	6.07	8	5.55	6	19.04	106.31
B. 4214	7.22	7	5.59	5	5.81	5	18.62	103.96
B. 40105	7.20	18	6.12	15	5.29	14	18.61	103.91
B. 46378	6.54	17	5.25	12	6.35	2	18.14	101.28
B. 44111	6.74	12	5.67	12	5.71	4	18.12	101.17
B. 44244	6.85	11	5.72	9	5.53	3	18.10	101.06
B. 37161	6.66	37	5.78	15	5.61	5	18.05	100.78
B. 4098	7.13	24	5.99	14	4.93	13	18.05	100.78
B. 43253	7.02	11	5.53	8	5.46	9	18.01	100.56
B. 4448	6.47	7	5.86	7	5.59	5	17.92	100.06
*B. 41227	6.90	72	5.84	42	5.17	24	17.91	100.00
B. 44341	6.60	12	5.21	11	5.89	4	17.70	98.83
B. 4373	6.74	12	5.83	10	4.98	4	17.55	97.99
B. 34104	6.68	118	5.65	107	5.05	89	17.38	97.04
B. 46369	6.98	6	4.96	5	5.06	2	17.00	94.92
B. 45151	6.66	7	4.82	3	5.47	2	16.95	94.64
				Two Crops, Plants and First Ratoons.				
B. 45137	6.63	7	6.63	4	.....	.....	13.26	104.08
B. 47258	6.79	5	6.32	4	.....	.....	13.11	102.90
*B. 41227	6.90	72	5.84	42	.....	.....	12.74	100.00
B. 34104	6.68	118	5.65	107	.....	.....	12.33	96.78
B.S. 4733	6.20	9	5.81	4	.....	.....	12.01	94.27
B.S. 4744	5.76	6	5.91	1	.....	.....	11.67	91.60
B. 47419	6.27	9	5.40	4	.....	.....	11.67	91.60
B. 47256	6.32	8	5.17	4	.....	.....	11.49	90.19

* Standard Canes.

TABLE VII.—The Quality of the Most Promising Seedlings as Compared with B. 41227.

Variety.	Pol. % Cane.		Juice Purity.	
	% of B. 41227	No. of Comparisons.	% of B. 41227	No. of Comparisons.
B. 4572	111.96	5	103.84	5
B. 43253	108.70	8	101.51	8
B. 4362	105.68	7	101.08	7
B. 46340	105.51	10	101.64	10
B. 4553	105.51	5	99.04	5
B. 4788	103.89	9	100.51	9
B. 47258	103.82	7	100.22	7
B. 4448	103.59	6	99.10	6
B. 44341	103.49	13	100.70	13
D. 37/45	103.36	17	100.38	17
D. 4/43	103.21	12	99.87	12
D. 62/43	102.15	28	99.86	28
B. 43214	102.12	6	99.11	6
B. 4765	102.03	7	99.79	7
B. 4098	101.98	22	99.72	22
B. 4699	101.93	11	100.15	11
B. 45151	101.90	12	99.44	12
D. 54/43	101.86	6	101.11	6
B. 40105	101.47	24	99.27	24
B. 46297	101.40	12	100.09	12
B. 46136	101.18	7	100.71	7
B. 46394	101.15	10	99.83	10
B. 46151	100.92	11	101.67	11
B. 44165	100.83	7	101.31	7
D. 142/41	100.73	13	100.97	13
B. 46281	100.61	5	99.68	5
B. 47314	100.44	9	101.34	9
B. 44111	100.40	13	99.93	13
B. 46230	100.35	5	98.77	5
B. 4214	100.34	7	89.99	7
*B. 41227	100.00	—	100.00	—
B. 4764	99.73	10	98.49	10
B. 46290	99.57	10	98.38	10
D. 14/45	99.21	5	100.16	5
D. 18/45	98.94	5	101.12	5
B.S. 4711	98.78	5	100.38	5
B. 46103	98.75	6	102.83	6
B. 45137	98.43	9	99.59	9
B. 4373	98.39	19	97.36	19
B. 47419	97.97	11	100.35	11
B. 34104	97.95	48	100.60	48
B. 43413	97.95	18	97.46	18
D 43/45	97.51	5	100.16	5
B. 46378	97.44	29	98.80	29
B. 46351	97.41	15	98.47	15
D. 158/41	97.29	7	97.43	7
B. 47298	97.09	9	100.72	9
B. 37161	97.07	31	100.54	31
B. 46102	96.98	8	98.53	8
B. 47135	96.41	6	99.27	6
D. 121/46	96.09	5	99.59	5
D. 8/45	95.90	6	97.72	6
B. 44244	95.76	10	99.51	10
B.S. 4744	95.55	7	100.02	7
B. 46232	95.33	14	99.46	14

* Standard Cane.

F. GENERAL SUMMARY AND RECOMMENDATIONS.

From the comments made on the various varieties in the foregoing, it is seen that there are several promising varieties in the Colony although B.41227 will be a difficult cane to surpass on its present performance. The main problem at present appears to be to determine those areas and conditions most suited to the more promising varieties. This can be ascertained by planting these seedlings as widely as possible on the sugar estates on relatively small areas—say one field per block. Such information is particularly required for the B.37161 and B.46378, both of which have outyielded B.41227 by considerable margins under conditions which suit them. To a lesser degree, such information is also required for other of the more promising seedlings.

On the basis of results obtained from the trials reaped to date and from observations of the estates' cultivations, the following recommendations are made.

Cane Variety.	SOIL TYPE.			
	Berbice Frontland Clay.	*Demerara Frontland Clay*	*Riverside Clays.*	*Pegasse.*
B.41227	50	50	50	35
B.37161	25	25	20	45
B.4098	5	5	5	—
D.37/45	5	5	10	—
B.4373	5	5	5	5
B.46378	5	5	5	5
B.4362 / B.43413	5	5	5	10

The figures given refer to the percentage of the area in the particular soil type recommended to be planted in the respective varieties.

These recommendations may be modified in accordance with the results from trials to be reaped in the future. Where conditions on certain estates appear to favour a particular variety more than another the management will necessarily be guided by local experience.

It is of particular importance that every effort be made to reduce the chances of infecting the newer varieties with leaf scald disease. In this connection, if care is taken in the selection of planting material; to rogue fields to be used for "drawing down" planting material; to take care to destroy (particularly on dam beds) growing stools of the very susceptible varieties B.34104, D.14/34 and Co. 419 prior to planting the newer varieties; to take the precautions recommended regarding the sterilization of knives used for cutting plants and in reaping; the spread of leaf scald disease to the higher yielding newer cane varieties will be so retarded as to allow of improving average yields locally while at the same time giving time to discover a variety which is resistant to the disease and also capable of giving yields equal to the better non-resistant varieties at present in cultivation on the estates.

A REVIEW OF FERTILIZER AND MANURIAL EXPERIMENTS ON SUGAR-CANE IN BRITISH GUIANA, 1930-1953.

BY

L. S. BIRKETT, *Sugar Agronomist.*

During the course of the past twenty-four years a very substantial fund of information has been obtained from the experiments designed and reaped by the Staff of the Sugar Experiment Station, and it is desirable that this work should be reviewed for the benefit of estates' staffs and administrators, and that the nature of the work to be undertaken in the future should be briefly outlined.

SOIL TYPES.

Before considering the data that is available it is desirable to describe briefly the major characteristics of the soil types that occur on the sugar estates since these soils differ very considerably and these differences have an influence on the nutrient requirements of the crop.

The sugar cane estates of British Guiana are situated along a narrow coastal strip. The probable genesis of these soils which are all alluvial, has been outlined by Follett-Smith[1] and others, while their classification has been discussed by Hardy and Rodrigues[2], and by Chenery and Knowles[3].

The soil types recognised at present are as follows:—

1.	Riverside Heavy Clay.	Zonal Alluvial Soils[2].
2.	Blairmont Clay.	
3.	Blairmont Loam.	
4.	Frontland Clay.	A Solonshak Soil.[2]
5.	Pegassy Clay.	
6.	Sand Reefs.	

1. **Riverside Heavy Clay.** These soils which occur along or adjoining the river banks are silty clays and are characterised by a well-developed orange brown, iron hydroxide encrusted, crumbly topsoil. Below the cultivated layer are to be found fairly strong ferruginous "pipes" formed by the decay of old tree roots and stems which had become encrusted with a more or less hard layer of iron hydroxide. This heavy clay usually extends downwards to a very considerable depth.

The topsoils are usually very highly acidic and of average organic matter content (2 to 3%). Carbon-nitrogen ratios are variable but generally below nine.

The clay content lies between 50 and 60% and the silt between 25 and 35 per cent. The sub-soil as is usual in the sugar cane soils of British Guiana becomes less acid with increased depth. The salinity of the topsoils is usually above average and increases rapidly below twenty-four inches depth in most cases.

2. **Blairmont Clays.** These soils are also silty clays characterised by having a fine micaceous sand subsoil usually at from two to four feet below the surface and were formed by reef sands being covered by silt and clay deposits from the adjoining rivers.

Blairmont Clays are of variable composition, the clay contents varying from 40 to 55%, while silt is usually present to the extent of 25 to 30% and fine sand from 10 to 25%. The organic matter content is usually between 2.0 and 2.8%. Carbon-nitrogen ratios are less than ten. The topsoils are generally markedly acid and the salinity below average. The subsoil sand layers are generally highly alkaline (pH 7.5 to 8.0).

3. **Blairmont Loams.** These soils are also variable in composition. In most cases the topsoils overlie a clay subsoil. The content of silt is usually between 15 and 25%. Sand varies from about 30 to 50% and clay from 30 to 40%. The organic matter content is usually between 1.50 and 2.25%. Carbon-nitrogen ratios are usually less than ten. The topsoils are generally acid and with a salinity below average.

4. **Frontland Clay.** This is by far the most widespread soil type on the sugar estates. The content of fine sand is low—usually not above 5% and generally around 1 to 2%. The silt content is usually between 22 and 30% and the clay content between 55 and 65% although up to 75% clay has been encountered. The organic matter content usually lies between 3.5 and 8.5% with carbon-nitrogen ratios generally below ten. These soils are almost invariably highly acid to very highly acid in the top twenty-four inches. Below this depth the acidity usually decreases but not as rapidly as in the case of the riverside soils. The salinity of the topsoils is generally higher than in the three previously described soil types and usually increases rapidly below the top twenty-four inches. In general, the available phosphate (by the Truog method) of this soil type is low—0 to 20 parts per million of P_2O_5.

5. **Pegassy Clay.** These tropical peaty soils are very variable in composition, the organic matter content of the topsoil varying from about 12 to 30%. This highly organic layer also varies considerably in depth; from 9 to 15 inches is more usual but it might extend downwards to three feet or more. Their carbon-nitrogen ratios are usually very high (10 to 20, but occasionally as high as thirty).

The highly peaty layer overlies a stiff very acid clay. The separation between the two layers is generally quite sharp where the organic layer extends below the cultivated depth. Both topsoil and subsoil are almost invariably

highly acidic. The content of exchangeable bases is usually considerably less than in the other soil types and lime, potash and magnesium may in some instances be below the minimum requirements for cane.

Available phosphate is also frequently below the minimum level while aluminium may be present in sufficient quantities to be toxic to the cane plant. The salinity is usually low in both top and subsoils.

Under cultivation the organic matter content of these soils gradually decreases and considerable changes occur. This has been discussed by Paul[18].

6. **Sand Reefs.** These soils are not regarded as cane soils and are only planted in cane where sandy pockets occur or where the reefs protrude in relatively small areas of otherwise normal cane soils. Where planted in cane, these soils are sandy loams with approximately 70% sand and usually between 15 and 20% clay.

PLANT NUTRIENT REQUIREMENTS.

For convenience, the various plant nutrients supplied by fertilizers, manures and soil ameliorants will be considered separately.

1. **Nitrogen.** Nitrogen is an almost universal requirement for the sugar cane soils of British Guiana. This is so well recognised that it is routine practice for this plant nutrient to be supplied to each field at each crop. Even where fields have been flood-fallowed prior to planting—a practice which increases the available nitrogen content of the soils from 40 to 80 lbs. of nitrogen per acre as has been shewn elsewhere[4]—it is nevertheless customary to apply a further 50 lbs. of nitrogen per acre to the plant cane crop following germination of the setts. As might be expected however, the responses to nitrogen of the plant cane crop in fields that have been flood-fallowed are less than on the ratoons that follow.*

1. *The Effects of Nitrogen on Yield.* Response to nitrogen is variable but general on all soil types.

Williams and Cameron[5] have summarised the results of experiments on the application of ammonium sulphate on the frontland clays. The present paper has brought this information up to date and has also included the data for the pegassy clays. In addition, the data is presented in a different form in that the applications of nitrogen are given in lbs. nitrogen per acre and the yields are presented as relative yields with the yield when no nitrogen is applied = 100. The same procedure has been adopted in the case of the other fertilizers as in this manner the data is more conveniently presented for the purpose of discussion and for general application. Yields are calculated on the basis of tons pol. per acre.

*Note. The flood-fallowing of frontland clays and of riverside soils is almost universal practice. Pegassy soils cannot usually be flood-fallowed as they are too porous to retain the water used for flooding.

Where the pol. % cane has not been given owing to the differences between treatments not being statistically significant or where this analysis was not made, a figure of 13% pol. in cane has been assumed in making the calculation of tons pol. per acre.

The data for the two main soil types are summarised in Table I.

TABLE I.

Rate of Application per Acre. Lbs. Nitrogen.	Relative Yields of Pol. per Acre.			
	Flood-Fallowed Frontland Clays.		Pegassy Clays.	
	Plants.	Ratoons.	Plants.	Ratoons.
0	100	100	100	100
47	110	123	113	112
94	112	143	122	121
141	109	151	130	130
188	—	152	131	132
235	—	—	131	133

The relationship between the relative yields (R.Y.) and the rate of application of inorganic nitrogen in lbs. nitrogen per acre (N), is given by the following equations :—

(i) *Frontland Clays and Riverside Soils.*
  (a) *Plants.* R.Y. $= 100 + .285\ N - 00160\ N^2$.
  (b) *Ratoons.* R.Y. $= 100 + .600\ N - 00165\ N^2$.

(ii) *Pegassy Clays.*
  (a) *Plants and Ratoons.* R.Y. $= 100 + .280\ N - 00058\ N^2$.

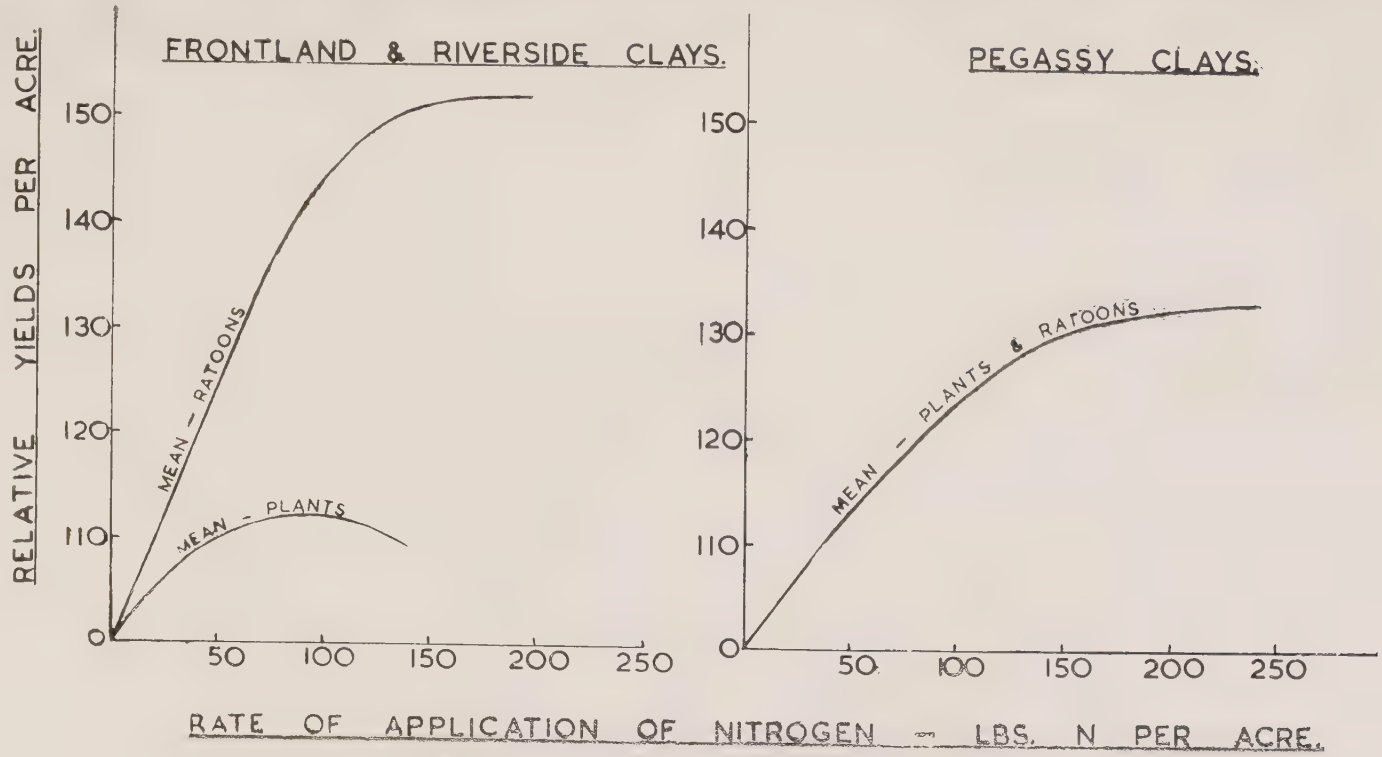
These average data are graphed in *Figure I.* In addition, the data for fields representing the extremes found are also inserted on these graphs in order to illustrate the degree of variation from the average data that might occur in the case of individual fields.

The rates of application of nitrogen recommended in estate practice are 47 and 94 lbs. of nitrogen per acre to plants and ratoons respectively on flood-fallowed soils, and the higher rate to plants and ratoons on non-flood-fallowed land.

The residual effects of inorganic nitrogenous fertilizers have only been determined in a few tests. These shew that no statistically significant residual effect is obtained from such fertilizers.

2. *Relative Values of different sources of Nitrogen.* In British Guiana practically all of the extraneous nitrogen requirements of the sugar cane is supplied by inorganic fertilizers, mainly in the form of sulphate of ammonia.

FIGURE I - RESPONSE TO NITROGEN.



The majority of the experiments on nitrogen requirements therefore pertain to this fertilizer. During the war however, owing to the impossibility of obtaining adequate supplies of ammonium sulphate other inorganic nitrogen fertilizers were used and their value assessed in most cases by comparison against ammonium sulphate.

Table II summarises the relative yields from equivalent applications of nitrogen using alternative nitrogen fertilizers.

TABLE II.

RELATIVE YIELDS FROM EQUIVALENT APPLICATIONS OF NITROGEN USING ALTERNATIVE NITROGEN FERTILIZERS.

Fertilizer.	Relative Yields with Ammonium Sulphate Yield = 100.	
	On Frontland Clays.	On Pegassy Clays.
Ammonium Nitrate.	104.38±2.17	—
Nitrochalk.	97.35±1.14	100.70±1.32
Calcium Cyanamide.	96.70±0.65*	100.51±1.25
Sodium Nitrate.	89.11±1.26*	97.04±1.17

* Denotes that the differences are statistically significant.

Ammonium chloride was also tested but not in a sufficient number of experiments for its effects on yield relative to ammonium sulphate to be treated statistically. On the basis of comparisons against nitrochalk however, it appears to be equally effective as the sulphate.

It should be noted that the form in which the inorganic nitrogen is applied is of considerable importance in the case of the frontland clays and the riverside soils but of less importance in the case of the pegassy clays. It is also of interest that on these latter soils, the fertilizers containing calcium tend to give a somewhat better yield than those that do not contain this element although the difference is rarely statistically significant.

Owing to the relatively small number of animals maintained on the sugar estates, pen manure is rarely applied to cane fields in British Guiana and in consequence few experiments to determine its value have been laid down. It appears however, that dressings of 12 to 15 tons of pen manure per acre to plants can replace the normal application of inorganic fertilizers to that cycle. At this rate of application, pen manure has but slight residual effects on succeeding crops.

In the few experiments with special organic nitrogenous manures (Bacterised peat, Leathermeal and Keratozine), it does not appear that these possess any advantages over the inorganic forms of nitrogen and are in fact more expensive sources of this plant nutrient.

Molasses and filter press cake have also been used in trials and while the former may be regarded mainly as a supplier of potash and the latter of phosphate they are also sources of nitrogen. The nitrogen content of these two sources of the nutrient however, is not sufficiently high to warrant their usage for this purpose alone although they possess value as fertilizers in other respects.

3. *Effect of Nitrogen on the Pol. content of the Cane.* Williams and Cameron[5] have previously shewn that in British Guiana there is a high negative correlation between the quantity of nitrogen applied as sulphate of ammonia and the pol. content of the cane. Summarising their conclusions from a study of over 2,000 analyses they said, "applications of sulphate of ammonia affect adversely the sucrose content of the cane, the glucose ratio and juice purity, the intensity of the effect varying directly with the rate of application."

The foregoing statement is particularly the case on the frontland clays and the riverside soils but the effects of nitrogen on the pol. content of the cane is erratic in the case of the pegassy clays.

In the case of the clay soils, the relationship between the amount of nitrogen applied in lbs. per acre and the relative pol. content of the cane is given by the following equation :—

$$S = 100.00 + \log N - .038 \log N$$

where,

S = Pol. in cane as a percentage of the Pol. content at the "no nitrogen" level.

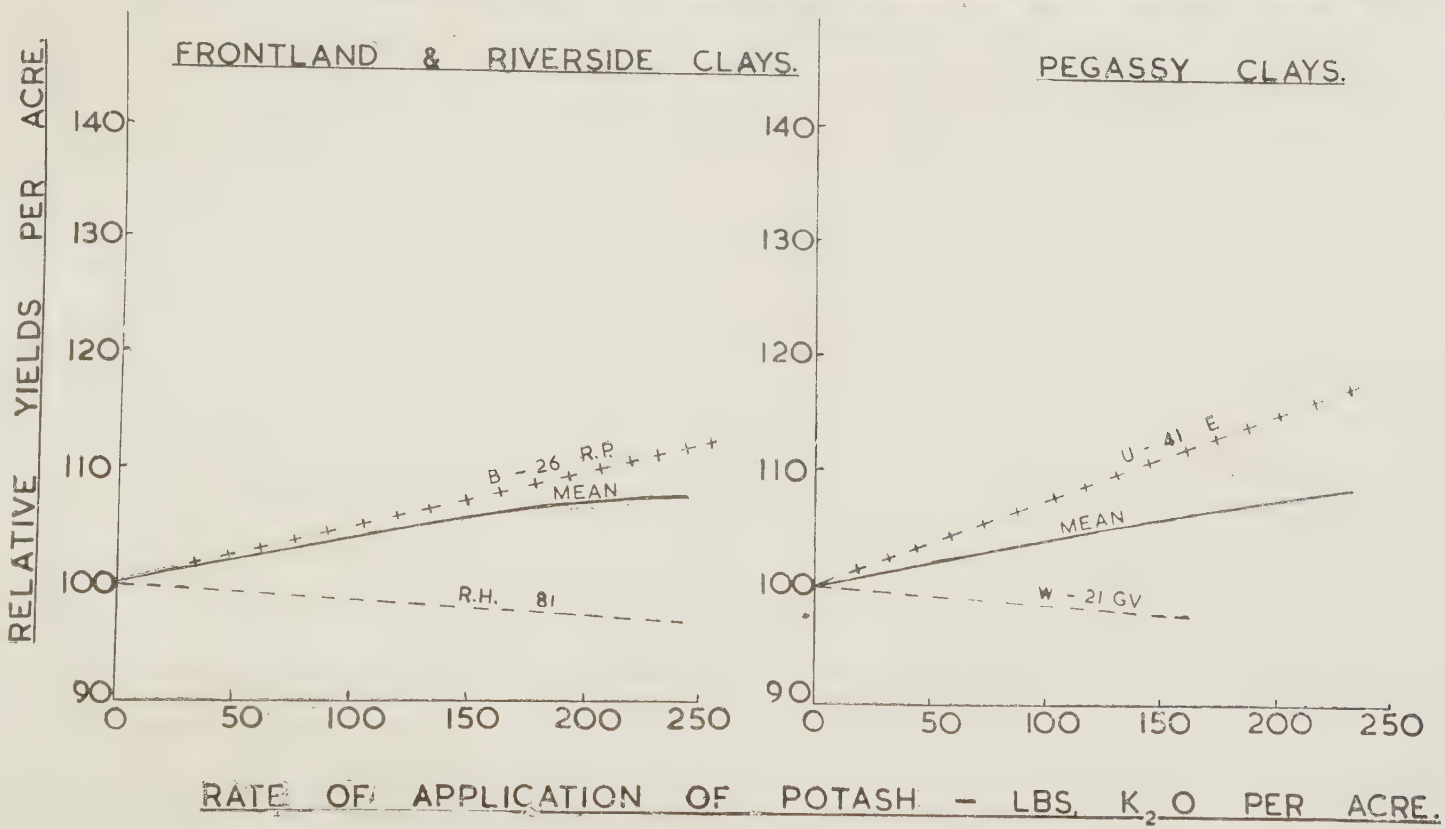
N = Lbs. nitrogen applied per acre.

Concurrently with the fall in pol. % cane, there is a decrease in the purity of the juice and an increase in its reducing sugars content. It should be noted however, that the reduction in the pol. content of the cane with increase in the amount of nitrogen applied is not usually sufficiently great to offset the increase in the yield of sugar that is obtained from the applications of nitrogen which are recommended.

II. **Potash.** No experiments to test the response to potash have been conducted since 1944 and in general less work has been done in connection with applications of potash than has been the case with fertilizers supplying other nutrients.

On frontland clays and riverside soils, statistically significant positive responses to potash have been obtained in three of the seven fields in which experiments have been laid down. On the pegassy clays, positive responses have been obtained in seven of the thirteen fields tested. In one case a significant negative response was obtained.

FIGURE II - RESPONSE TO POTASH.



1. *The Effects of Potash on Yield.* The mean relative yields for all the experiments with inorganic potash fertilizers conducted to date are presented in Table III.

TABLE III.

Rate of Application per Acre. Lbs. K_2O.	*Relative Yields. (No Potash = 100).*	
	Frontland Clays.	Pegassy Clays.
0	100	100
108	104	105
215	107	108

It will be seen that there is little difference in the means for the two soil types on which experiments have been laid down. There is however, considerable variation in the degree of response with soil type, the greater variability occurring in the case of the pegassy clays. The degree of variability that might occur is illustrated in *Figure II* in which the data for two extreme cases are compared with the mean for each soil type.

Applications of final molasses have produced appreciable increases in yield in some cases, mainly on pegassy clays, and this is probably largely attributable to its potash content which is approximately 4% by weight of the molasses.

From the data obtained to date, it does not appear that either the available potash by the citric acid method or the value of the exchangeable potash are suitable for indicating the likely requirements of potash for the sugar cane soils of British Guiana.

2. *Effects of Potash on Cane Quality.* From the relatively few experiments with potash fertilizers, no definite statements as to the effect of potash on cane quality in British Guiana can be given.

3. *Relative Values of different sources of Potash.* While in one case, the chloride of potash proved to be significantly better than the sulphate, in general the two sources of potash are equally effective. The chloride however, is a cheaper source of potash.

III. **Phosphate.** A considerable number of experiments have been conducted locally to test the response by the sugar cane to phosphatic fertilizers.

It is well recognised that large areas on many sugar estates possess soils that appear on the basis of soil analyses to be deficient in available phosphate. In consequence, it was thought that such soils would give remunerative responses

to applications of phosphates. However, soil analyses have not proved to be of great value in the case of the majority of riverside soils or in frontland clays but in the case of the pegassy clays the "available" phosphate (by the Truog method) is a satisfactory guide for indicating areas that will respond to applications of phosphate. In general, positive and remunerative responses to phosphate will be obtained on such soils where the available phosphate by the Truog method is less than fifty parts per million.

1. *The Effects of Phosphate on Yield.* Of the experiments involving phosphatic fertilizers carried out to date on Riverside soils and Frontland Clays, positive statistically significant responses have been obtained in 28% of the fields in which the experiments were laid down. In the case of similar experiments on the pegassy clays, positive responses have been obtained in 47% of the fields. The variations in yields from applications of phosphates is so great and erratic however, that mean results, similar to those given for nitrogen and potash, are of little value. The data from four experiments which are plotted in *Figure III.* will serve to demonstrate the great variation that occurs.

In general, riverside soils do not appear likely to respond to applications of phosphates, indeed in some cases applications of phosphates may actually tend to depress the yield. Some frontland clays respond to applications of phosphates but it is on the pegassy clays that the greatest benefits from such applications have so far been obtained, the yield having been increased by as much as 60% in one case by such applications.

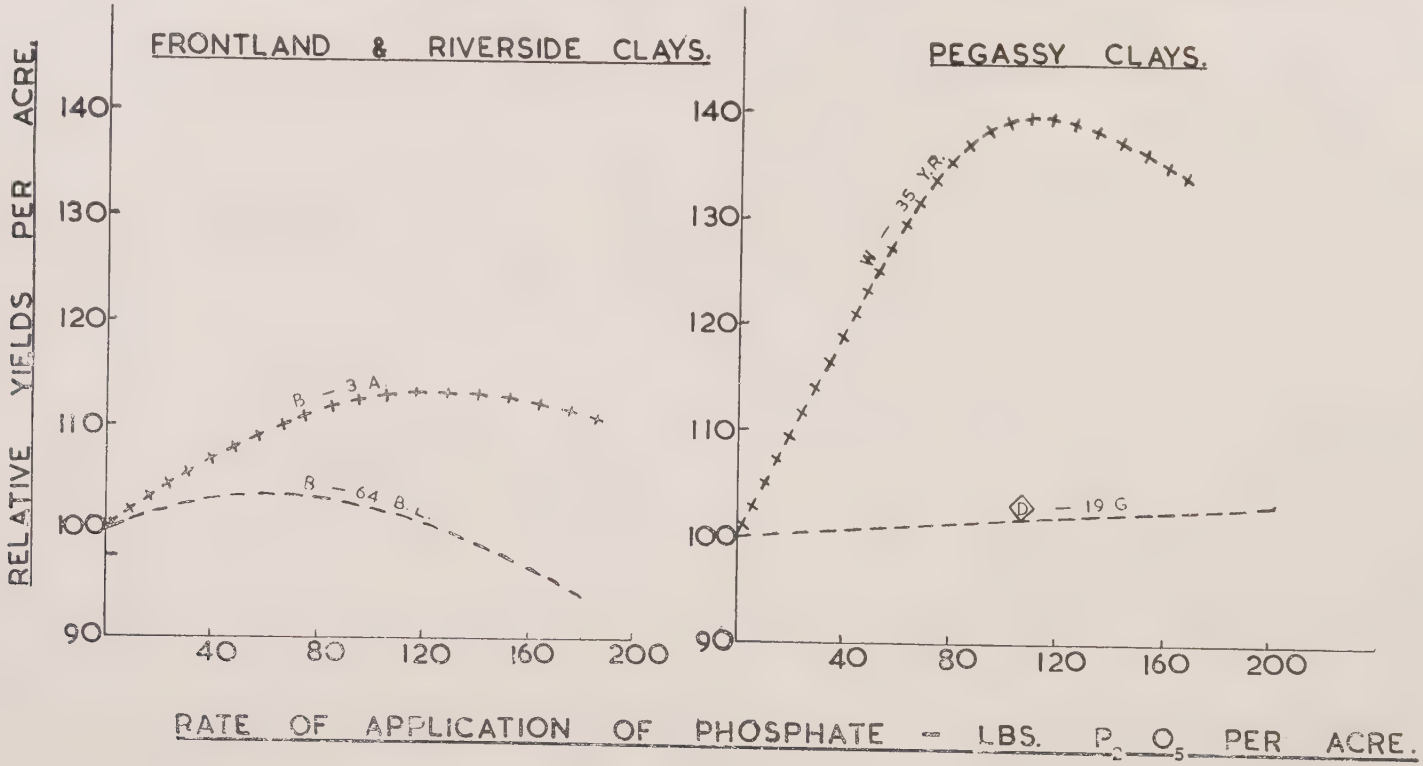
Residual responses in yield of sugar from applications of phosphates have been obtained in a number of cases (mainly on pegassy clays) where the responses to phosphates were high. There have also been instances where no residual responses from phosphate applications were obtained in the absence of nitrogen but where such residual response was obtained when nitrogen was subsequently added. On the other hand, the use of high nitrogen-high phosphate dressings has not resulted in the spectacular increases in yields which have been reported from such applications elsewhere in the neighbouring colonies.

There have been a number of cases of interactions between phosphates and lime and phosphates and potash and it appears that quite frequently where response to phosphate is obtained a response to lime might be expected.

Laboratory studies by Bourne[6] have shewn that the sugar cane soils of British Guiana have a very high phosphate-fixing capacity as determined by chemical tests. He also shewed that in the laboratory, liming of the soils did not reduce the phosphate-fixing ability of the soils and therefore liming could not be recommended on this score. These results have more recently been confirmed by Hardy and Hewitt[7].

In view of the high phosphate-fixing property of local soils, experiments were laid down to determine whether placement of the phosphatic fertilizers in

FIGURE III - RESPONSE TO PHOSPHATE.



the region of the young cane roots at a depth of six to nine inches would give better results than the usual method of broadcasting the fertilizer on the surface of the soil near the cane stools. While in some cases there appeared to be a slight difference in favour of placement of the fertilizer, these differences were not generally statistically significant.

2. *Relative Values of different sources of Phosphate.* Calcium superphosphate, Nicifos, basic slag, rock phosphate, silicophosphate, ammonium phosphate and filter press cake have all been used in trials involving phosphates. Unfortunately, there are few experiments in which these fertilizers were directly compared. However, with the exception of rock phosphate in which form equivalent yield responses appear to require that a higher rate of P_2O_5 be added to soils, the others seem to be of equal value as sources of phosphate under local conditions.

It has been the more usual practice to apply superphosphate to the riverside soils and frontland clays and basic slag or rock phosphate to the pegassy clays in view of the very high acidity of the latter. Filter press cake is usually applied by the estates to dam beds only.

3. *Effect of Phosphates on Cane Quality.* In some cases addition of phosphatic fertilizers improved the quality of the cane by amounts that were statistically significant, in others the reverse occurred. In general however, additions of phosphate had no significant effects on cane quality.

IV. **Lime.** The sugar cane soils of British Guiana range from slightly acid to very strongly acid soils. Assuming that the soils from the experiment sites on the various sugar estates which are given in the Sugar Bulletins are representative of the cane soils of the Colony as a whole the following summary (Table IV) of these analyses is illuminating.

TABLE IV.

Degree of Acidity.		*Riverside Soils and Frontland Clays.*	*Pegassy Clays.*
Slightly Acid.	pH 7.0 — 6.0	16 %	2 %
Moderately Acid.	pH 6.0 — 5.5	32 %	4 %
Strongly Acid.	pH 5.5 — 5.0	32 %	28 %
Very Strongly Acid.	pH less than 5.0	20 %	66 %

It has been established[8] that during the last forty years there has been more than a hundredfold increase in the acidity of the caneland soils of the Colony. This has been largely the result of the practice of flood-fallowing and also to the fact that sulphate of ammonia is the major fertilizer used. In this latter connection, a statistically significant increase over a cycle of four crops

in the theoretical lime requirement of soils receiving applications of sulphate of ammonia has been demonstrated[9]. It has also been shewn that the application of one ton of ground limestone per acre at planting will approximately offset the degree of acidity developed by the normal rates of application of sulphate of ammonia over four crops. In consequence, this rate of application of limestone at planting has been advised more in the form of an insurance against any marked further increase in acidity than as a means of sensibly increasing the yield of sugar.

1.. *The Effects of applications of Lime on Yield.* A summary of the data obtained from experiments on liming discloses that the majority of these were designed to test the effects of relatively low rates of liming materials (0.5 to 3 tons of $CaCO_3$ per acre). The number of experiments involving the rates of application likely to give substantial yield responses are comparatively few. In consequence, there have been few experiments in which a statistically significant yield response to applications of lime has been demonstrated although there have been a few spectacular results from high applications of lime, mainly in the case of the pegassy clays.

The following table summarises average results to date.

Soil Type.	*Average Rate of Application per Acre in Tons.*	*Relative Average Response (No lime = 100).*
Frontland Clays.	2.75	103.8†
Pegassy Clays.	2.73	110.0*

† Omitting experiments at Sophia Experiment Station where responses to lime are relatively high.

* Significant at 5% level.

Despite the increasing acidity of the sugar cane soils, yields have increased mainly owing to the use of higher yielding cane varieties, improved flood-fallowing and to a better fertilizer policy than formerly. These increases in yield appear to have obscured the importance of the problem of increasing soil acidity and induced an attitude of complacency towards it.

The sugar cane appears to be very tolerant to soil acidity and there is little evidence that acidity *per se* is a factor limiting cane growth in British Guiana except in a few small areas. However, high acidity is associated with a number of undesirable soil conditions which are worthy of some consideration. These may briefly be noted here.

(i). The high acidity of most of the Colony's caneland soils indicates that they possess a relatively low content of bases—magnesium excepted. Although the general level of magnesium is satisfactory, potash and calcium are probably approaching the margin of deficiency in some cases. Any conditions, (whether from the use of higher yielding cane varieties, increased applications of nitrogen,

better irrigation, etc.), which will increase yields will necessarily accentuate the removal of bases and hence increase the chances of fields with marginal quantities of available lime or potash becoming deficient in such nutrients.

There is some indication that calcium might be actually deficient as a plant nutrient in some of the more acid pegassy soils and the slightly better results that are obtained from nitrogenous fertilizers containing calcium on such soils (see Table II) affords some evidence in this connection.

(ii) As soils become more acid, the solubility of iron and aluminium is increased and eventually with increased soil acidity the concentrations of soluble compounds of these elements in the soil may attain levels that are toxic to the sugar cane. There is no doubt that such instances have occurred locally in respect to aluminia, particularly in a number of pegassy soils.

Duthie and Bourne[10] have shewn that the content of 'active' alumina in clay soils is appreciably less than in the pegassy soils. Unpublished work by Bourne[11] has shewn that the 'active' alumina content of frontland clay topsoils is usually less than 100 parts per million but in the pegasse soils the level is usually several hundred parts per million and may often exceed 1000 parts per million. Applications of lime in the requisite amount will correct the toxic condition in soils having excessive quantities of active alumina.

(iii) As soil acidity increases so does the availability of some plant nutrients decrease. This is the case with phosphates for instance, which form insoluble phosphates with the iron and alumina which is set free under such conditions. Liming, by reducing soil acidity, will thus increase the availability of the phosphates in acid soils.

(iv) Much has been written from time to time on the improvement in the physical properties of clays by the addition of lime thereto and while the degree of improvement will depend not only on the degree of saturation of the base complex with lime but on the chemical nature of the clay, any such improvement is of considerable importance where heavy clays obtain.

(v) In temperate climates it has been shewn that the microbiological processes in acid soils are generally inimical to most crop plants but that as soil acidity is reduced the microbiological changes that occur in soils become more favourable to most crops. It is not possible to say much on this score with reference to local conditions as no work has been conducted in this field. Since acid soil conditions in general favour fungi and depress or inhibit bacterial growth, it might be assumed that liming will also have some beneficial results in this connection in addition to those mentioned previously.

Lime Requirement and the pH of the soil. There need not necessarily be any close relationship between the theoretical lime requirements of different soils and their pH. However, in the case of the frontland and riverside clays of the colony the relationship between the two is sufficiently close to provide a guide to the lime requirements. In the pegassy clays the relationship is not

so close, but in general at any given pH, their lime requirements is appreciably higher than in the case of the other two soil types. In *Figure IV* are given two curves which have been prepared from the data obtained from the analyses of soils given in the Sugar Bulletins and which are useful in this connection.

V. Minor Elements. In the majority of the cane fields of the Colony, yields of cane are generally relatively high. Where low yields obtain they are usually the result of poor drainage, excessive soil acidity or a deficiency of one or more of the major plants nutrients. However, in some small areas where yields may be below average, none of the above-mentioned possible causes would appear to be responsible. It is possible that in these cases there is either a deficiency of some minor element or possibly an excess.

Manganese. Only in the case of manganese has an experiment using a minor element been laid down by the staff of the Experiment Station. In this experiment no response in yield resulted.

Recent work by Evans[19] indicates that in some areas manganese is actually present in excessive amounts.

ALTERNATIVE METHODS OF DETERMINING THE NUTRIENT REQUIREMENTS OF THE SUGAR CANE IN BRITISH GUIANA.

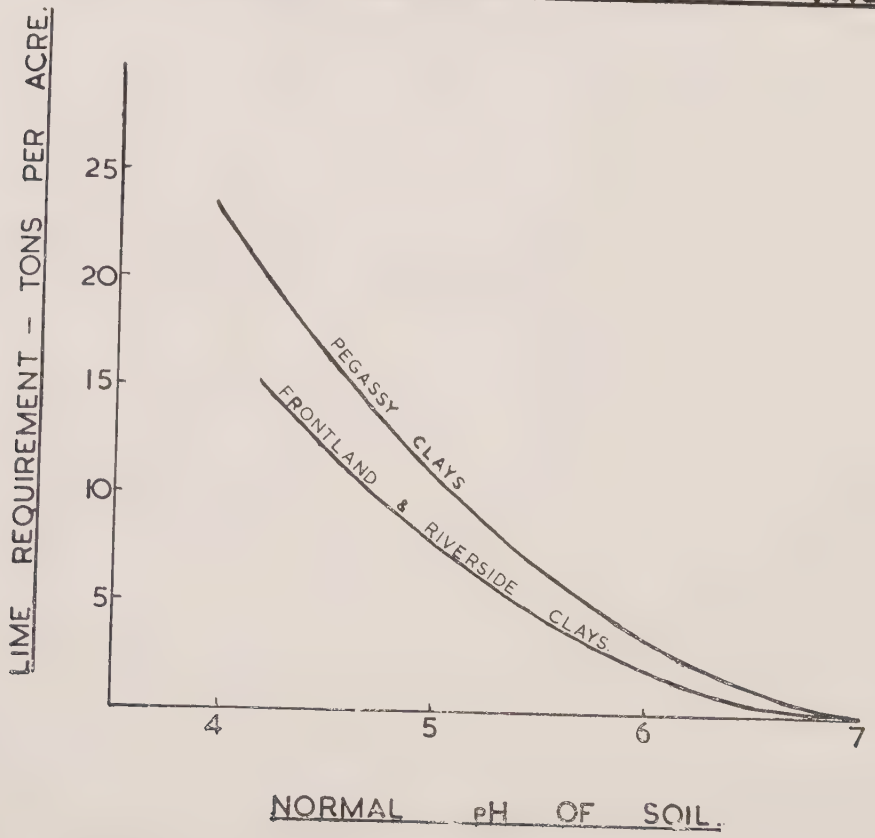
The foregoing summary of the fertilizer experiments conducted to date, indicates the need for continued and more comprehensive investigations in this line of work.

In the past, the investigations were conducted along the lines of the classical field trials. That is to say, the effects of different levels of various fertilizers on plant growth and yield are determined in different areas and under varying climatic conditions on randomised plots. The findings of such tests are, however, strictly applicable only to the given area under test and under given circumstances. The application of the results of these trials to other areas presupposes that the soils, etc., are comparable. Reference to the previous discussion and the tabulated results clearly demonstrates that even where an attempt is made to classify the soils into certain types, there is often considerable variation in the yield responses to the various fertilizers and that each field should strictly be considered individually for optimum results.

Field experiments involve a considerable expenditure of time and money and these considerations limit the number that can be laid down and reaped. In consequence, there is need of a suitable method, or variety of methods, that will allow of relating the information obtained from the field experiment to a wider range of soil conditions with a lower expenditure of time and money.

From what has been said in this discussion it is seen that the method of soil analysis is of limited application under local conditions although its possibilities are not claimed to have been exhausted. Pot culture methods have also

FIGURE IV - RELATIONSHIP BETWEEN NORMAL pH AND LIME REQUIREMENT.



5. *Williams, C. H. B. and Cameron, C.* "Manurial Trials. Effect of Fertilizers on Cane Quality." Sugar Bulletin, No. 9, Department of Agriculture, British Guiana, pp. 49—54.

6. Bourne, C. L. C. "Some Preliminary Experiments on Phosphate Fixation in British Guiana Sugar-Cane Soils." Sugar Bulletin, No. 10, Department of Agriculture, British Guiana, 1941, pp. 50—61.

7. *Hardy, F. and Hewitt, C. W.* "Phosphate Fixation in British Guiana Sugar-Cane Soils." Tropical Agriculture, 1948, XXV, pp. 19—22.

8. *Follett-Smith, R. R.* "Annual Reports of the Chemical Division," Department of Agriculture, British Guiana, 1932.

9. *Follett-Smith, R. R.* "Annual Reports of the Chemical Division," Department of Agriculture, British Guiana, 1936.

10. *Duthie, D. W. and Bourne, C. L. C.* "Acidity and 'Active' Alumina in British Guiana Sugar Cane Soils." Agricultural Journal of British Guiana, X, 3, 1939.

11. *Bourne, C. L. C.* Private Communication, 1949.

12. *Birkett, L. S. and Bourne, C. L. C.* "An Outline of the Soil Work being undertaken at Blairmont Estate," 1950. Unpublished.

13. *Hardy, F.* "The Phosphate Status of some British Guiana Sugar-Cane Soils as Assessed by a Simple Pot Test." Tropical Agriculture, XXVI, Nos. 1—6, pp. 43—47.

14. *Holme, R. V.* "The Importance of Soil Tests as shewn by the Use of Corn Microplot Experiments." Proceedings, 1944 Meeting of B.W.I. Sugar Technologists Association.

15. *Knowles, W. H. C.* "Manurial Trials with Sugar Cane." Sugar Bulletin, No. 17, Department of Agriculture, British Guiana, 1949, p. 27.

16. *Lines, G. T.* "Some Experiments on the Foliar Diagnosis of Sugar Cane in British Guiana." Unpublished.

17. *Birkett, L. S.* "The British Guiana Sugar Experiment Station—A Survey of the Past and Recommendations for the Future." Unpublished.

18. *Paul, H.* "The Trace Element Status of Peat Soils in British Guiana." 1953 Meeting of the International Society of Sugar Cane Technologists, Barbados.

19. *Evans, H.* Private Communication, 1954.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, XIX.

BY

L. S. BIRKETT, *Sugar Agronomist.*

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(1). *Commercial Yields, 1953.* The average yield in 1953, of tons sugar per acre from all varieties on sugar estates in British Guiana was 3.47 tons as compared with 3.43 tons per acre in 1952. The yields of the various varieties on the individual estates are presented in Table I which is drawn up on a regional basis as follows :—

	Region.	*Table.*	*Estates Included.*
1.	East Coast Demerara.	(Table I A)—	Ogle, La Bonne Intention, Lusignan, Enmore.
2.	West Coast Demerara.	(Table I B)—	Uitvlugt *cum annexis,* Leonora *cum annexis.*
3.	Demerara River Banks.	(Table I C)—	Diamond *cum annexis,* Ruimveldt, Houston, Wales, Versailles, Schoon Ord.
4.	Berbice.	(Table I D)—	Bath, Blairmont, Providence, Rose Hall, Albion, Port Mourant, Skeldon.

The data contained in Tables I A, B, C and D are summarised for the major cane varieties in Table II.

TABLE I (A).—Weighted Mean Commercial Yields in East Demerara, 1953.

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar per Acre.*
		Plant Canes.		
		100 Acres and over.		
B. 40105	177.9	12.81	80.96	3.96
B. 41227	1,145.8	13.31	80.68	3.75
B. 37161	1,081.0	13.51	81.31	3.74
B. 34104	1,081.4	13.43	81.40	3.51
		Under 100 Acres.		
B. 4098	66.5	14.58	81.27	4.49
D. 62/43	30.0	13.39	81.04	3.61
Co. 419	43.5	14.47	82.11	3.22
Mixed	15.6	12.43	80.25	3.14
D. 158/41	26.0	14.23	81.30	2.35
		First Ratoons.		
		100 Acres and over.		
B. 41227	805.0	13.26	80.95	3.66
B. 37161	589.2	13.96	81.95	3.38
B. 40105	250.3	14.16	81.43	3.35
B. 34104	1,886.1	13.27	81.26	3.30
		Under 100 Acres.		
B. 4362	.3	15.13	82.12	6.67
B. 46378	.2	15.13	82.12	5.00
Co. 419	9.2	13.68	81.92	4.89
D. 158/41	16.3	12.56	79.83	3.80
D. 62/43	4.5	13.78	82.32	3.23
Mixed	14.9	9.56	74.69	2.71
D. 49/41	4.1	12.07	80.47	2.44
P.O.J. 2878	41.7	11.27	78.43	2.23
		Second Ratoons.		
		100 Acres and over.		
B. 37161	185.0	14.69	82.56	3.75
B. 41227	427.1	14.07	82.13	3.24
B. 34104	3,092.8	13.59	81.75	3.11
		Under 100 Acres.		
B. 40102	58.3	13.34	79.63	3.77
B. 40105	68.8	14.29	80.71	3.28
D. 158/41	29.5	12.95	79.53	3.25
D. 14/34	87.3	14.15	83.18	3.08
D. 49/41	74.7	14.00	82.17	3.06
D. 142/41	97.2	13.74	82.24	3.06
P.O.J. 2878	2.3	14.31	85.21	1.30
		Third Ratoons.		
		100 Acres and over.		
D. 14/34	508.1	13.78	82.41	3.20
B. 34104	1,542.4	13.65	82.35	2.96
		Under 100 Acres.		
B. 40102	59.0	13.28	80.97	3.43
B. 40105	30.9	13.78	81.66	3.08
D. 49/41	52.6	13.34	80.82	2.95
B. 41227	71.8	13.61	81.32	2.78
D. 142/41	40.6	14.18	82.39	2.76
B. 37161	71.2	13.35	81.76	2.67
		Fourth Ratoons.		
		100 Acres and over.		
B. 34104	581.1	13.21	81.02	2.65
		Under 100 Acres.		
Diamond 10	2.7	12.96	80.89	2.59

*Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (B).—**Weighted Mean Commercial Yields in West Demerara, 1953.**

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar per Acre*.
		Plant Canes.		
		100 Acres and over.		
B. 4098	313.8	13.45	81.40	5.09
B. 37161	1,273.7	14.28	83.35	4.67
B. 41227	1,130.0	13.51	81.69	4.63
		Under 100 Acres.		
B. 4362	12.5	16.50	86.88	5.01
B. 47225	1.2	16.67	87.74	4.17
B. 46378	4.0	15.60	86.19	4.15
Co. 419	10.2	14.05	80.52	4.15
Mixed	5.2	14.22	82.01	3.94
D. 62/43	43.4	13.50	81.63	3.72
B. 43253	10.7	16.02	87.07	3.29
D. 142/41	4.0	14.16	84.49	1.95
		First Ratoons.		
		100 Acres and over.		
B. 4098	108.7	14.56	83.47	4.33
B. 41227	619.5	14.06	82.41	3.99
B. 37161	985.3	14.28	83.61	3.98
B. 34104	220.4	13.75	82.82	3.41
		Under 100 Acres.		
Mixed	2.9	14.17	81.90	3.83
D. 62/43	40.5	14.45	82.71	3.79
D. 142/41	8.9	14.28	83.48	3.44
B. 43253	4.0	13.49	80.78	2.95
		Second Ratoons.		
		100 Acres and over.		
B. 37161	276.3	14.68	83.59	3.81
B. 41227	240.2	14.69	83.55	3.72
D. 142/41	247.8	15.06	83.92	3.11
B. 34104	1,598.7	14.29	83.65	2.95
		Under 100 Acres.		
B. 4098	17.2	14.64	83.36	4.15
D. 62/43	3.7	14.11	82.03	2.43
		Third Ratoons.		
		100 Acres and over.		
B. 34104	1,615.4	14.23	83.72	3.12
D. 14/34	191.5	15.07	85.46	3.04
		Under 100 Acres.		
B. 37161	85.5	14.52	83.21	3.41
B. 41227	27.0	14.84	82.76	3.20
D. 142/41	31.2	15.72	85.45	2.70
Co. 419	44.2	14.35	83.64	2.38
Mixed	8.4	14.71	84.47	2.32
		Fourth Ratoons.		
		100 Acres and over.		
D. 14/34	173.2	14.81	83.88	3.22
B. 34104	1,043.2	14.06	83.22	3.10
		Under 100 Acres.		
D. 142/41	9.5	14.48	83.70	3.58
Co. 419	50.0	14.53	82.18	2.78
B. 37161	37.0	13.70	81.07	2.69
Mixed	9.5	15.09	84.30	2.54
D. 26/39	1.2	14.80	82.96	2.50

*Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (C).—**Weighted Mean Commercial Yields along Demerara River Banks, 1953.**

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar per Acre.*
		Plant Canes. 100 Acres and Over.		
B. 34104	238.3	13.81	82.25	4.89
D. 142/41	103.9	13.73	82.03	4.80
B. 37161	892.6	13.66	81.89	4.42
B. 4362	125.0	14.81	82.86	4.33
B. 41227	1,442.7	13.59	81.54	4.26
B. 4098	448.9	13.90	82.31	3.98
Co. 419	225.1	13.77	81.74	3.66
		Under 100 Acres.		
D. 62/43	29.6	13.05	80.79	4.45
D. 158/41	40.5	14.44	82.06	4.43
D. 49/41	17.5	13.96	81.98	4.17
D. 37/45	5.2	14.54	82.13	3.83
B. 40105	.5	12.51	79.18	2.00
		First Ratoons. 100 Acres and Over.		
B. 34104	673.8	13.14	81.43	4.05
B. 37161	718.8	14.12	82.46	3.98
B. 4098	140.9	14.56	82.52	3.85
B. 41227	1,717.7	13.62	81.64	3.85
Co. 419	297.8	12.47	79.56	3.56
		Under 100 Acres.		
D. 158/41	14.9	14.11	82.31	4.22
B. 4362	41.0	14.29	84.00	3.95
D. 142/41	54.3	13.89	82.06	3.95
D. 49/41	3.0	13.02	81.40	3.53
D. 14/34	50.5	14.13	82.61	3.23
D. 62/43	16.8	13.92	82.11	2.70
		Second Ratoons. 100 Acres and Over.		
B. 37161	821.7	14.33	82.88	3.82
B. 41227	764.5	13.76	81.88	3.57
D. 14/34	241.1	15.89	84.17	3.11
D. 142/41	232.0	13.68	82.29	2.86
B. 34104	1,810.7	13.91	82.81	2.79
		Under 100 Acres.		
B. 4362	5.5	15.89	81.50	4.18
D. 158/41	7.8	14.02	81.78	4.03
B. 4098	24.5	17.49	85.78	4.00
D. 49/41	11.5	14.78	83.14	3.82
D. 62/43	.5	12.95	78.96	2.00
		Third Ratoons. 100 Acres and Over.		
B. 37161	501.5	14.66	83.64	3.72
B. 34104	2,615.4	13.82	82.14	3.27
D. 14/34	158.5	14.99	84.65	2.84
		Under 100 Acres.		
B. 41227	22.0	17.00	87.02	3.86
D. 142/41	3.0	14.97	83.65	3.83
		Fourth Ratoons. 100 Acres and Over.		
B. 34104	1,264.8	13.44	82.14	3.06
		Under 100 Acres.		
D. 14/34	47.5	14.38	81.99	3.26
B. 37161	22.0	14.61	84.31	3.09
Diamond 10	5.5	13.52	80.00	2.55

*Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (D).—Weighted Mean Commercial Yields in Berbice, 1953.

Variety.	Acres Harvested.	Crusher Juice.		Tons 96° Sugar per Acre.*
		Pol. %	Purity.	
		Plant 100 Acres	*Canes. and over.*	
B. 4098	1,114.5	14.24	81.44	3.80
B. 37161	1,222.0	13.36	81.50	3.79
Co. 419	151.2	13.22	77.90	3.77
B. 41227	2,028.5	14.29	82.42	3.66
B. 34104	1,374.8	14.11	81.97	3.48
D. 14/34	140.9	15.12	83.81	2.34
		Under 100	*Acres.*	
D. 62/43	38.5	14.74	84.05	4.26
Mixed	18.3	13.90	82.64	3.58
D. 37/45	15.5	16.15	81.81	3.29
B. 4362	18.5	14.82	81.58	3.19
D. 142/41	1.0	14.91	83.46	3.10
D. 158/41	1.6	12.49	81.40	2.25
		First 100 Acres	*Ratoons. and over.*	
B. 37161	996.6	14.16	81.75	3.84
D. 142/41	115.6	13.77	80.82	3.80
B. 41227	2,731.4	14.68	80.76	3.66
B. 34104	1,945.7	14.12	81.53	3.53
B. 4098	382.5	14.74	82.36	3.25
D. 14/34	482.3	14.55	83.17	3.14
D. 158/41	103.7	13.83	81.34	3.02
		Under 100	*Acres.*	
Mixed	8.8	14.06	80.24	4.40
Co. 419	3.3	12.78	82.45	3.94
D. 62/43	12.8	13.46	80.41	3.37
P.O.J. 2878	18.9	12.54	81.22	2.67
		Second 100 Acres	*Ratoons. and over.*	
B. 37161	199.4	13.04	80.49	3.91
B. 4098	147.7	14.51	81.20	3.78
B. 41227	484.1	14.75	82.48	3.50
D. 142/41	132.9	14.36	82.28	3.49
B. 34104	3,999.1	14.63	82.56	3.34
D. 14/34	276.3	15.28	83.65	3.10
		Under 100	*Acres.*	
B. 43253	1.2	15.75	83.73	5.33
D. 49/41	9.3	14.83	81.95	4.61
D. 158/41	12.0	15.59	83.19	4.53
B. 37172	3.0	16.18	84.90	3.68
Mixed	3.2	15.44	83.43	3.06
		Third 100 Acres	*Ratoons. and over.*	
B. 37161	111.9	14.34	82.28	3.34
B. 34104	4,592.1	14.02	82.06	3.28
D. 14/34	570.6	14.67	82.87	2.90
Co. 421	170.5	14.03	81.33	2.84
Co. 419	142.9	13.81	77.81	2.62
		Under 100	*Acres.*	
B. 4098	29.5	14.22	81.36	4.59
B. 41227	86.5	15.11	82.69	3.79
B. 41211	6.3	13.31	76.30	3.76
Mixed	1.0	16.16	80.40	3.60
B. 37172	1.9	14.12	82.13	3.53
D. 142/41	14.0	14.53	83.10	3.29
D. 158/41	.7	16.67	85.50	2.00
D. 62/43	1.0	14.87	84.01	2.00
B. 40102	.1	15.19	85.10	1.00
		Fourth 100 Acres	*Ratoons. and over.*	
B. 34104	2,237.7	14.62	82.79	3.15
Co. 421	414.3	13.55	80.99	2.85
D. 14/34	291.2	15.35	84.10	2.30
		Under 100	*Acres.*	
B. 37172	.8	14.08	82.45	4.50
B. 41227	38.9	14.09	81.78	3.36
D. 25/38	7.0	14.75	80.11	3.34
B. 4098	7.1	14.68	82.03	3.18
Mixed	2.0	13.87	81.66	3.00
B. 41211	.7	13.13	82.30	2.86
B. 142/41	.9	14.79	81.88	2.78
Co. 419	82.6	13.84	80.24	1.73
B. 37161	16.7	14.05	82.24	1.47

* Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (E).—**Weighted Mean Commercial Yields under Estate Conditions, 1953.**

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar Per Acre.*
		Plant Canes. 100 Acres and over.		
D. 142/41	108.9	15.60	86.19	4.68
B. 4362	156.0	15.38	84.21	4.25
B. 37161	4,469.3	13.60	81.80	4.15
B. 4098	1,943.7	14.03	81.64	4.07
B. 41227	5,747.0	13.81	81.74	4.02
D. 62/43	141.5	13.59	81.73	3.99
B. 40105	178.4	12.75	80.60	3.95
Co. 419	430.0	13.96	81.02	3.66
B. 34104	2,694.5	13.80	81.78	3.62
D. 14/34	140.9	15.12	83.81	2.34
		Under 100 Acres.		
B. 47225	1.2	16.67	87.74	4.17
D. 49/41	17.5	13.96	81.98	4.17
B. 46378	4.0	15.60	86.19	4.15
D. 37/45	20.7	15.34	81.97	3.83
D. 158/41	68.1	14.01	81.78	3.58
Mixed	39.1	13.78	82.12	3.46
B. 43253	10.7	16.02	87.07	3.29
Seedlings	38.4	15.20	82.78	2.21
		First Ratoons. 100 Acres and over.		
D. 142/41	178.8	15.13	82.12	3.83
B. 37161	3,289.9	14.13	82.13	3.83
B. 41227	5,873.6	14.08	81.28	3.75
Co. 419	319.3	12.85	80.87	3.60
B. 4098	632.1	14.65	82.79	3.57
B. 34104	4,726.0	13.69	81.59	3.51
B. 40105	250.3	14.16	81.43	3.35
D. 158.41	134.9	13.68	81.33	3.25
D. 14/34	532.8	14.41	82.98	3.15
		Under 100 Acres.		
B. 46378	.2	15.13	82.12	5.00
B. 4362	41.3	14.58	83.38	3.97
D. 62/43	74.6	13.76	81.53	3.44
Mixed	26.6	13.35	79.87	3.39
B. 43253	4.0	13.49	80.78	2.95
D. 49/41	7.1	12.54	80.93	2.90
P.O.J. 2878	60.6	11.69	79.36	2.37
		Second Ratoons. 100 Acres and over.		
B. 4098	189.4	14.98	82.47	3.84
B. 37161	1,482.4	14.02	82.15	3.82
B. 41227	1,915.9	14.39	82.45	3.50
B. 34104	10,501.3	14.18	82.54	3.12
D. 14/34	604.7	15.12	83.70	3.10
D. 142/41	709.9	14.11	84.46	3.09
		Under 100 Acres.		
B. 43253	1.2	15.75	83.73	5.33
B. 4362	5.5	15.89	81.50	4.18
B. 40102	58.3	13.34	79.63	3.77
D. 158/41	49.3	14.54	81.93	3.69
B. 37172	3.0	16.18	84.90	3.68
D. 49/41	95.5	14.49	82.28	3.31
B. 40105	68.8	14.29	80.71	3.28
Mixed	3.2	15.44	83.43	3.06
D. 62/43	4.2	13.53	80.49	2.38
P.O.J. 2878	2.3	14.31	85.21	1.30

	Estates	B. 34104	B. 41227	Co. 421	P.O.J. 2878	Mixed.	D. 14/34
Berbice.	Skeldon	2,535.00	1,257.80	—	—	—	—
	Port Mourant	1,794.50	3,357.50	—	16.20	31.90	—
	Albion	2,509.10	1,608.70	—	2.70	6.80	132.90
	Rose Hall	1,178.00	2,326.20	—	—	3.20	—
	Lochaber	403.00	23.00	14.00	12.00	8.00	—
	Providence "B"	413.90	651.70	64.20	—	—	389.60
	Blairmont	583.35	685.50	—	—	13.40	311.05
	Bath	311.55	415.25	—	—	.30	638.00
	Total Dutch	9,728.40	10,325.65	78.20	30.90	63.60	1,471.55
	" English	10,224.55	10,852.26	82.19	32.48	66.84	1,546.60
	%	31.13	33.04	.25	.10	.20	4.71
East Demerara.	Enmore	3,549.20	1,154.00	—	5.70	13.50	—
	Lusignan	3,041.60	606.60	—	36.00	—	3.70
	L.B.I.	591.10	1,320.00	—	—	—	15.40
	Ogle	487.70	1,217.90	—	2.30	—	55.80
	Total Dutch	7,669.60	4,298.50	—	44.00	13.50	74.90
	" English	8,060.75	4,517.72	—	46.24	14.19	78.72
	%	45.49	25.50	—	.26	.08	.44
Demerara River Banks.	Houston	410.87	526.64	—	—	—	93.76
	Diamond	1,184.50	2,930.50	—	—	10.00	116.00
	Wales	771.70	1,893.50	—	—	2.00	—
	Versailles	1,284.70	413.20	—	—	—	51.60
	Total Dutch	3,651.77	5,763.84	—	—	12.00	261.36
	" English	3,838.01	6,057.80	—	—	12.61	274.69
	%	21.44	33.84	—	—	.07	1.54
West Demerara.	Leonora	720.20	657.60	—	—	—	—
	Uitvlugt	1,813.65	2,196.40	—	—	137.94	102.25
	Total Dutch	2,533.85	2,854.00	—	—	137.94	102.25
	" English	2,663.08	2,999.55	—	—	144.97	107.46
	%	23.07	25.99	—	—	1.26	.93
	Colony English	24,786.39	24,427.33	82.19	78.72	238.61	2,007.47
	%	30.98	30.53	.10	.10	.30	2.51

TABLE III—Acreages in Varieties for th

7161	D. 158/41	Co. 419	D. 62/43	B. 4098	B. 46378	D. 142/41	D. 54/43	D. 200/36
8.00	26.40	151.20	—	126.40	—	64.50	—	—
5.90	54.60	—	59.70	215.70	.60	9.20	—	—
3.10	11.00	—	9.80	1,798.30	.70	76.80	—	—
2.20	29.20	3.30	2.60	1,663.10	—	63.00	—	—
—	—	—	—	—	—	—	—	—
1.10	1.60	—	.60	2.00	—	1.00	—	—
2.30	4.05	—	4.00	387.20	.25	60.70	14.50	10.00
9.60	117.70	104.60	66.70	64.95	2.50	1.50	—	—
7.20	244.55	259.10	143.40	4,257.65	4.05	276.70	14.50	10.00
6.71	257.02	272.31	150.71	4,474.79	4.26	290.81	15.24	10.51
3.27	.78	.83	.46	13.62	.01	.89	.05	.04
.20	—	—	7.00	77.40	—	—	—	—
.00	.50	—	7.30	5.40	—	—	—	—
.80	2.80	113.70	1.50	244.80	1.00	60.00	—	—
.50	69.40	—	26.00	185.30	—	23.00	—	—
.50	72.70	113.70	41.80	512.90	1.00	83.00	—	—
.48	76.41	119.50	43.93	539.06	1.05	87.23	—	—
.63	.43	.67	.25	3.04	.01	.49	—	—
29	—	—	—	57.43	—	—	—	—
50	12.50	—	29.00	539.50	—	103.50	—	—
80	71.70	727.10	2.00	275.80	1.40	53.60	—	—
40	12.00	1.30	18.80	314.30	34.00	243.30	—	—
99	96.20	728.40	49.80	1,187.03	35.40	400.40	—	—
16	101.11	765.55	52.34	1,247.57	37.21	420.82	—	—
62	.56	4.28	.30	6.97	.21	2.35	—	—
80	—	10.50	25.40	484.50	—	79.30	—	—
55	—	60.25	62.25	524.64	10.46	142.50	—	—
35	—	70.75	87.65	1,009.14	10.46	221.80	—	—
35	—	74.36	92.12	1,060.61	10.99	233.11	—	—
30	—	.64	.80	9.19	.10	2.02	—	—
20	434.54	1,231.72	339.10	7,322.03	53.51	1,031.97	15.24	10.51
36	.54	1.54	.42	9.15	.07	1.29	.02	.01

e Year 1954 on the Sugar Estates which are set out on a Regional Basis.

D. 37/45	B. 43253	B. 47225	B. 4362	Diamond 10	B. 40105	D. 49/41	New Seedlings
—	—	—	2.00	—	—	—	—
.90	—	—	3.50	—	—	—	—
87.60	—	—	—	—	—	9.30	1.60
41.80	—	—	36.30	—	5.00	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
5.20	1.20	.50	—	—	—	—	—
—	—	—	—	—	—	—	—
135.50	1.20	.50	41.80	—	5.00	9 30	1.60
142.41	1.26	.53	43.93	—	5.25	9.77	1.68
.43	.00	.00	.13	—	.02	.03	.00
—	—	—	167.20	—	35.50	—	—
3.30	—	.20	—	—	.20	—	—
1.30	—	1.60	185.70	—	494.60	—	—
11.00	—	—	16.70	—	27.60	36.30	5.50
15.60	—	1.80	369.60	—	557.90	36.30	5.50
16.40	—	1.89	388.45	—	586.35	38.15	5.78
.09	—	.01	2.19	—	3.31	.22	.04
—	—	—	—	—	—	—	—
5.00	—	—	686.50	16.00	—	—	—
3.70	—	2.20	2.90	.50	—	.10	2.70
40.40	—	—	11.00	—	—	50.00	—
49.10	—	2.20	700.40	16.50	—	50.10	2.70
51.60	—	2.31	736.12	17.34	—	52.66	2.84
.29	—	.01	4.11	.10	—	.30	.01
4.40	—	—	267.70	—	—	—	34.00
20.75	15.25	105.98	110.03	—	6.50	—	6.50
25.15	15.25	105.98	377.73	—	6.50	—	40.50
26.43	16.03	111.38	396.99	—	6.83	—	42.57
.23	.14	.97	3.44	—	.06	—	.36
236.84	17.29	116.11	1,565.49	17.34	598.43	100.58	52.87
.30	.02	.15	1.96	.02	.75	.13	.07

ne Varieties, 1953.

1341	B. 43413	B. 4466	B. 4448	B. 44244	B. 44111	1953. Old R.	Crusher Juice. Pol. %	Purity.
						2.24	13.97	82.14
						2.94	14.18	81.88
						3.18*	14.40	82.07
						3.48*	14.37	82.61
						3.06	13.95	82.23
						2.13	13.76	80.82
						2.70	14.77	85.12
						2.98	14.06	82.21
.20	20.00	4.00	3.10	1.90	1.60			
.20	20.00	4.00	3.10	1.90	1.60			
.08	21.02	4.20	3.26	2.00	1.68			
.10	.12	.02	.02	.01	.01			
8.08	21.02	4.20	3.26	2.00	1.68			
.02	.03	.00	.00	.00	.00			

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onal basis and for the
ies which make up the

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be Reaped in 1954.

bution.

In Berbice.	Colony.
41.3	31.0
44.4	30.5
28.9	18.9
61.1	9.2
77.0	2.5
2.8	2.0
22.1	1.5
28.2	1.3
23.5	1.1
.9	.8
59.1	.5
44.4	.4
60.1	.3

B. 4466	B. 4448	B. 44244	B. 44111	B. 40102	B. 4373	B. 37172	TOTAL
—	—	—	—	—	—	—	4,831.30
—	—	—	—	—	—	—	5,790.20
—	—	—	—	—	—	3.00	6,446.40
—	—	—	—	—	—	—	7,073.90
—	—	—	—	—	—	—	460.00
—	—	—	—	—	—	—	1,935.70
—	—	—	—	—	—	—	2,783.20
—	—	—	—	—	—	—	1,932.65
—	—	—	—	—	—	3.00	31,253.35
—	—	—	—	—	—	3.15	32,847.26
—	—	—	—	—	—	.01	100.00
—	—	—	—	—	—	—	5,266.70
4.00	3.10	1.90	1.60	—	—	—	4,033.60
—	—	—	—	96.00	.50	—	4,459.80
—	—	—	—	—	—	—	3,100.00
4.00	3.10	1.90	1.60	96.00	.50	—	16,860.10
4.20	3.26	2.00	1.68	100.90	.53	—	17,719.97
.02	.02	.01	.01	.57	.00	—	100.00
—	—	—	—	—	—	—	1,149.99
—	—	—	—	—	—	—	9,231.50
—	—	—	—	—	.30	—	3,978.00
—	—	—	—	—	—	—	2,671.00
—	—	—	—	—	.30	—	17,030.49
—	—	—	—	—	.32	—	17,899.04
—	—	—	—	—	.00	—	100.00
—	—	—	—	—	—	—	4,321.40
—	—	—	—	—	—	—	6,659.90
—	—	—	—	—	—	—	10,981.30
—	—	—	—	—	—	—	11,541.35
—	—	—	—	—	—	—	100.00
4.20	3.26	2.00	1.68	100.90	.85	3.15	80,007.62
.00	.00	.00	.00	.13	.00	.00	100.00

TABLE II.—**Average Estates Yields for the Major Cane Varieties, 1953.**

Cane Variety.	Average Yield, Tons Sugar per Acre, 1953.					Crusher Juice.	
	Plants.	1 R.	2 R.	3 R.	Old R.	Pol. %	Purity.
B. 37161	4.15	3.83	3.82	3.53	2.24	13.97	82.14
B. 41227	4.02	3.75	3.50	3.79	2.94	14.18	81.88
B. 4098	4.07	3.57	3.84	4.59*	3.18*	14.40	82.07
D. 142/41	4.68	3.83	3.09	2.86	3.48*	14.37	82.61
B. 34104	3.62	3.51	3.12	3.21	3.06	13.95	82.23
Co. 419	3.66	3.60	—	2.56	2.13	13.76	80.82
D. 14/34	3.34	3.15	3.10	3.02	2.70	14.77	85.12
Colony Average (All Varieties).	3.97	3.65	3.24	3.19	2.98	14.06	82.21

* Acreages small and yields therefore not to be regarded as necessarily representative in these cases.

(2). *Varietal Composition of the 1954 Harvests.* The variety position for 1954 on an estate basis has been abstracted from returns supplied by the sugar estates and refer only to estate grown canes, which however, are responsible for approximately 98% of the sugar production of the Colony. This data which is presented in Table III is further summarised in Table IV to shew the percentage distribution of the various cane varieties on a regional basis and for the Colony as a whole. The acreage occupied by the varieties which make up the "other canes" category is given in Table V.

TABLE III. (facing this page—inset).

TABLE IV.—**Percentage Distribution of the Varieties to be Reaped in 1954.**

Variety.	Total English Acres in the respective varieties.	Percentage Distribution.				
		In West Demerara.	Along Demerara River Banks.	In East Demerara.	In Berbice.	Colony.
B. 34104	24,786.39	10.7	15.5	32.5	41.3	31.0
B. 41227	24,427.33	12.3	24.8	18.5	44.4	30.5
B. 37161	15,088.20	23.6	28.0	19.5	28.9	18.9
B. 4098	7,322.03	14.5	17.0	7.4	61.1	9.2
D. 14/34	2,007.47	5.4	13.7	3.9	77.0	2.5
B. 4362	1,565.49	25.4	47.0	24.8	2.8	2.0
Co. 419	1,231.72	6.0	62.2	9.7	22.1	1.5
D. 142/41	1,031.97	22.6	40.8	8.4	28.2	1.3
Other Canes	938.11	26.4	16.4	33.7	23.5	1.1
B. 40105	598.43	1.1	—	98.0	.9	.8
D. 158/41	434.54	—	23.3	17.6	59.1	.5
D. 62/43	339.10	27.2	15.4	13.0	44.4	.4
D. 37/45	236.84	11.2	21.8	6.9	60.1	.3

TABLE V.—**Acreages of the Varieties Constituting "Other Canes."**

Variety.	English Acres.		Variety.	English Acres.		Variety.	English Acres.	
	1953	1954		1953	1954		1953	1954
P.O.J. 2878	147	79	D. 54/43	—	15	B. 44341	18	18
Co. 421	—	82	B. 40102	—	101	B. 46378	9	54
Diamond 10	9	17	B. 43253	17	17	B. 47225	—	116
D. 200/36	11	10	B. 43413	21	21	New Seedlings	174	53
D. 49/41	201	101						

(3). *The Changing Variety Pattern.* It will be seen from Table IV that B.34104 still occupies 31.0% of the acreage scheduled for reaping in 1954. The greater part of this acreage is however, in ratoons, although part is in plants. In this connection, attention is drawn to the comments made in this Bulletin on this variety. (See pages 30 and 39).

B.41227 which has risen from 21.7% of the total acreage for reaping in 1953, to 30.5% for 1954, continues to gain in popularity as has the B.37161 and B.4098. It will also be noted from Table IV that the B.4362 appears to be the most popular of the other varieties, the acreage planted in this variety having shewn a significant increase.

Several other varieties, namely Co. 419, D.158/41, D.37/45, D.142/41, B.40105 and B.47225 are being grown on a limited scale.

The introduction of new cane varieties has played a major part in the attainment of higher yields of sugar in British Guiana and the major advances in this direction are likely to continue to depend on the breeding of higher yielding varieties suited to the peculiar conditions of the Colony.

The comparatively rapid change in the variety pattern for the Colony is well demonstrated in Table VI wherein the area for reaping under the major cane varieties is shewn as percentages for the period 1942—1945.

(4). *Cycle Age of Crops.* Table VII summarises the distribution of the acreage under cane in plants and the various categories of ratoons for the period 1945 to 1954.

It will be noted that there is a continuation of the tendency for the percentage of plants to decrease owing to the concurrent increase in the percentage of old ratoons retained. With the object of increasing average yields and of discarding B.34104 as rapidly as possible, this tendency should be reversed.

TABLE VI.—Comparison of Areas Under Cane Varieties in British Guiana, 1942—1954.

Variety.	Per cent. of Total Areas in the Colony.												
	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
P.O.J. 2878	68.8	68.0	65.1	54.8	40.4	27.6	13.6	6 9	1.6	0.4	—	—	—
Diamond 10	28.1	26.5	25.5	26.7	25.4	21.6	14.4	8.4	3.1	0.9	0.4	—	—
D. 166/34	—	1.6	2.2	2.2	1.6	1.0	0.5	—	—	—	—	—	—
Co. 419	—	1.3	3.0	4.9	6.5	7.7	8.2	6.8	4.5	2.7	1.7	1.4	1.5
Co. 421	—	—	1.6	6.3	15.1	19.4	19.3	14.2	8.5	3.5	2.1	0.8	—
D. 14/34	—	—	—	2.7	6.4	11.3	17.4	20.6	20.2	15.0	8.6	4.9	2.5
B. 34104	—	—	—	—	1.6	7.6	22.6	39.8	58.4	67.4	60.2	47.7	31.0
D. 200/36	—	—	—	—	—	1.5	1.9	1.7	0.7	—	—	—	—
B. 4098	—	—	—	—	—	—	—	—	—	—	1.3	4.6	9.2
B. 37161	—	—	—	—	—	—	—	—	1.4	3.6	9.4	14.4	18.9
B. 40105	—	—	—	—	—	—	—	—	—	—	0.5	0.7	.8
B. 41227	—	—	—	—	—	—	—	—	0.3	3.8	12.7	21.7	30.5
D. 142/41	—	—	—	—	—	—	—	—	0.2	1.4	1.6	1.6	1.3
D. 158/41	—	—	—	—	—	—	—	—	—	—	0.3	0.4	.5
D. 62/43	—	—	—	—	—	—	—	—	—	—	—	0.3	.4
B. 4362	—	—	—	—	—	—	—	—	—	—	—	0.5	2.0
D. 37/45	—	—	—	—	—	—	—	—	—	—	—	—	.3
Other Canes	3.1	2.6	2.6	2.4	3.0	2.3	2.1	1.6	1.1	1.3	1.2	1.0	1.1

TABLE VII.— **Cycle Age of the Crops, 1945—1954.**

Category.	Percentages.									
	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
Plants	24.9	29.3	28.4	31.3	31.2	33.1	28.8	27.8	26.1	25.0
1st Ratoons	17.2	23.6	27.0	26.1	26.5	27.4	28.2	23.4	23.9	25.1
2nd Ratoons	24.0	16.4	22.3	24.5	24.8	23.3	24.4	23.7	22.4	23.0
3rd Ratoons	22.3	18.2	11.8	14.3	15.2	12.6	15.1	18.8	18.2	17.8
4th Ratoons	9.1	10.1	7.0	2.5	2.0	3.1	3.0	5.4	8.5	7.4
5th Ratoons	2.5	2.4	3.5	1.3	.3	.5	.5	.9	.9	1.7
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(5). *Fertilizers in 1952.* Table VIII presents statistics relative to the value and quantity of fertilizers used on the sugar estates in British Guiana for the years 1951, 1952 and 1953. It will be noted that there has been a decrease in the quantity of limestone applied while there has been an increase in the amount of P_2O_5 applied.

TABLE VIII.—Values and Quantities of Fertilizers Used on British Guiana Sugar Estates, 1951—1953.

Fertilizers.	Value, $			Per cent. of Total Value.			Per Ton, $			Quantity, Tons.			Per cent. of Total Quantity.		
	1951	1952	1953	1951	1952	1953	1951	1952	1953	1951	1952	1953	1951	1952	1953
Ammonium Sulphate	1,777,813.78	2,174,427.77	1,634,435.81	90.7	91.9	90.3	128.00	148.42	123.48	13,889.47	14,650.72	13,236.02	66.9	63.7	67.3
Basic Slag	62,539.90	20,188.88	2,274.55	3.2	.9	.1	78.50	108.95	64.43	796.70	185.30	35.30	3.8	.8	.2
Superphosphate	451.80	4,336.20	2,364.91	...	.2	.2	62.75	69.50	197.90	7.20	62.39	11.19	...	.3	...
Hyperphosphate *	...	...	34,897.42	...	...	1.9	...	...	85.57	...	...	407.80	...	...	2.1
Muriate of Potash	...	...	470.40	...	...	...	...	...	112.00	...	...	4.20	...	...	...
Sulphate of Potash	...	...	390.54	...	...	...	...	...	113.20	...	...	3.45	...	...	...
Limestone	116,960.73	162,362.07	135,509.57	6.0	6.9	7.5	19.36	20.25	22.70	6,040.48	8,016.13	5,970.59	29.1	34.8	30.4
TOTAL	1,957,766.21	2,361,314.92	1,810,343.20	99.9	99.9	100.0	...	...	...	20,733.85	22,914.54	19,668.55	99.8	99.6	100.0

* Finely ground Rock Phosphate.

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1953.

STAFF.

L. S. Birkett, Dip. Agric. (I.C.T.A.), A.I.C.T.A.	*Sugar Agronomist.*
C. Cameron	*Field Manager.*
H. I. Gomes	*Field Assistant.*
G. L. Knight	*Field Assistant, (to March).*
S. L. Cameron	*Field Assistant.*
R. Dookun	*Field Assistant, (from April).*
S. Phillippe	*Field Assistant, (from December).*
K. Chung	*Statistical Assistant.*
S. Mangra	*Laboratory Assistant.*
S. Buchanan	*Typist.*

Mr. Knight resigned the post of Second Field Assistant to take up an appointment as Overseer on a Sugar Estate.

Following Mr. Knight's resignation, Mr. S. Cameron was promoted Second Field Assistant on the 1st April, 1953.

Mr. R. Dookun was appointed Third Field Assistant on the 1st April, 1953.

Mr. S. Phillippe was appointed Fourth Field Assistant on the 1st December, 1953.

Absences of the Staff from duty during the year were as follows :—

	Casual Leave.	Sick Leave
Mr. H. Gomes	8. 6.53 — 13. 6.53 and 21.12.53 — 28.12.53	—
Mr. S. Cameron	16. 6.53 — 20. 6.53 and 21.12.53 — 28.12.53	—
Mr. R. Dookun	21.12.53 — 28.12.53	—
Mr. K. Chung	29. 6.53 — 11. 7.53	—
Mr. S. Mangra	14. 7.53 — 27. 7.53	—
Miss S. Buchanan	1.12.53 — 16.12.53	18. 8.53 — 26. 8.53

SUGAR EXPERIMENT STATIONS' COMMITTEE.

The following members formed the British Guiana Sugar Experiment Stations' Committee for the year :—

The Director of Agriculture	*Chairman.*
Mr. R. R. Follett-Smith	*Messrs. Bookers Sugar Estates, Ltd.*
Mr. H. F. Chapman	*Messrs. S. Davson & Co., Ltd., (from July).*
Mr. G. M. Eccles	*Messrs. S. Davson & Co., Ltd., (to June).*
Mr. W. O'B. Rigden	*Messrs. Sandbach Parker & Co., Ltd.*
Mr. J. Baxter	*Messrs. Bookers Sugar Estates, Ltd.*
Mr. S. A. Angoy	*Secretary.*

RESEARCH SUB-COMMITTEE

The following members formed the British Guiana Sugar Experiment Stations' Research Sub-Committee for the year :—

The Director of Agriculture	*Chairman.*
Dr. H. Evans	*Messrs. Bookers Sugar Estates, Ltd.*
Mr. A. G. Harley	*Messrs. Sandbach Parker & Co., Ltd.*
Mr. J. S. Edwards	*Messrs. S. Davson & Co., Ltd.*
Mr. R. O. Williams	*Chief Research Officer, Department of Agriculture.*
Mr. L. S. Birkett	*Sugar Agronomist.*
Mr. J. A. Spence	*Plant Pathologist, Department of Agriculture.*
Mr. S. A. Angoy	*Secretary.*

I.S.S.C.T. CONFERENCE.

The 8th Conference of the International Society of Sugar Cane Technologists was held at Bridgetown, Barbados, from 20th April to 25th April, 1953. Mr. L. S. Birkett attended as one of the British Guiana delegates.

FINANCE.

The sum of $60,275.02 was voted from the funds of the Sugar Experiment Stations' Committee for the working of the Station during the year; the total amount expended was $57,075.74. Of the amount spent from the Stations vote,

the sum of $1,433.61 was used for wages in connection with Leaf Scald Investigations. This amount was refunded by Government. The actual expenditure for operating the Station in 1953 was therefore $55,642.13.

Receipts from assessments for the year amounted to $21,535.47; those from sale of canes to $31,255.78, and miscellaneous receipts to $2,306.81.

SEEDLINGS INTRODUCED.

Cane varieties received during the year from the Central Breeding Station, Barbados, B.W.I. were as follows: B.5121, B.5124, B.5143, B.5178, B.5192, B.51105, B.51116, B.51129, B.51131, B.51134, B.51156, B.51167, B.51168, B.51183, B.51190, B.51192, B.51211, B.51259, B.51311, B.51321, B.51353, B.51355.

TABLE I.—**Varieties under Test and Undergoing Multiplication, Etc., December, 1953.**

Year.	Number of Seedlings.					
	Barbados.		Demerara.		Other Countries.	
	In Test.	Under Multiplication.	In Test.	Under Multiplication.	In Test.	Under Multiplication.
Prior to 1940	—	—	—	—	3	3
1940	2	—	—	—	1	1
1941	—	—	2	—	1	1
1942	1	—	—	—	—	—
1943	5	3	5	2	—	—
1944	8	—	2	—	—	—
1945	12	2	57	1	—	—
1946	29	2	69	—	—	—
1947	34	4	—	—	—	—
1948	25	1	—	—	—	—
1949	31	31	—	—	—	—
1950	—	28	—	—	—	—
1951	—	22	—	—	—	—
Totals	147	93	135	3	5	5

EXPERIMENTS.

Experiments reaped during the year have been fully reported on elsewhere in this Bulletin. These consisted of fifty-two variety trials and seven sorting trials. No manurial trials were reaped but the results of previous work of this nature have been summarised. (See pages 41 to 54).

MISCELLANEOUS.

Table II represents statistics for recent years as to the number of field experiments started and harvested, cane cuttings distributed, cane samples analysed, etc.

TABLE II.—Statistics of Seedlings, Cane Distribution, Field Experiments, Cane and Soil Samples, Cane Sold and Visits Paid to Estates, 1944—1953.

Year.	Seedlings Basketed.	Cane Cuttings Distributed.		Field Experiments.		Cane Samples.		Soil Samples Taken.	Cane Sold to Pln. Ogle.		No. of visits to Estates.
		No. of Cuttings.	No. of Bags.	Started.	Harvested.	No. Taken and analysed.	Cane Crushed (Tons).		Deliveries (Tons).	Net Receipts. $	
1944	12,903	602,420	4,634	11	72	434	14	31	1,590.09	5,053.26	139
1945	6,043	578,240	4,448	98*	118†	605	14	95	1,461.02	6,812.25	173
1946	3,896	447,230	3,671	55*	111†	505	15	51	1,750.20	8,776.95	177
1947	—	172,900	1,330	27*	64†	403	15	18	2,153.37	9,542.47	211
1948	—	347,230	2,671	37	54	476	12	290††	2,232.05	9,892.36	162
1949	—	310,180	2,386	28	62	953	22	14†††	2,535.19	15,892.34	154
1950	—	105,720	1,762	18	65	719	24	—	3,135.25	20,080.18	154
1951	—	123,540	2,059	14	71	654	22	—	3,344.50	24,443.64	89
1952	59**	174,420	2,907	32	62	1,102	30	—	2,794.20	22,274.61	80
1953	1,133***	104,640	1,744	27	63	1,015	37	—	3,345.20	31,255.78	88

1945 { *Includes 64 Maize Micro-plot Experiments.
{ †Includes 53 " " "

1946 { *Includes 30 " " "
{ †Includes 39 " " "

1947 { *Includes 5 " " "
{ †Includes 5 " " "

1948 ††Includes 201 Sent to the I.C.T.A.

1949 †††Sent to Yale University.

1952 **Demerara crosses.

1953 ***Mauritius "fuzz."

During the course of the year the Experiment Station was visited by a party of forty students from the Imperial College of Tropical Agriculture, Trinidad under Mr. W. J. Badcock. The Station was also visited by 16 delegates who had attended the Conference of the International Society of Cane Sugar Technologists' in Barbabos and by Messrs. M. Guilleume, J. H. L. Joosten and Prof. W. F. Eysvoogel of the World Bank Mission. In addition, Mr. R. L. Steindl of Australia visited the Station in connection with a survey of the cane cultivations of the Colony for ratoon stunting disease. Several persons connected with the local sugar industry also visited the Station during 1953.

As in the past, close contact was maintained between the Industry and the Staff of the Sugar Experiment Station.

The cordial co-operation of the Staff of the Sugar Estates and of the Sugar Experiment Station is very gratefully acknowledged. Special mention must be made of the fact that in spite of a Colony wide strike in the Sugar Industry lasting for many weeks, as a result of this hearty co-operation only three experiments scheduled for reaping in the latter part of 1953 were "thrown over" to 1954.

L. S. BIRKETT,

Sugar Agronomist.

SUGAR CANE DISEASES IN BRITISH GUIANA.

BY

J. A. SPENCE, B.Sc., Dip. Ag. Sci., D.T.A. (Trin.).
Plant Pathologist.

"LEAF SCALD" DISEASE.

Leaf Scald investigations have progressed satisfactorily during the year. These have been concerned with the testing of commercial varieties for resistance to Leaf Scald disease and investigations into the chemistry of resistance. Experiments were also laid down designed to yield more accurate information on the reduction in yield due to the disease.

Varietal Resistance.

Formerly varieties were placed into four groups, (1) Very Susceptible, (2) Susceptible, (3) Tolerant, (4) Resistant, according to their reaction to the disease. It has been found necessary to add a further category to accommodate those varieties which appear as intermediate between "Susceptible" and Tolerant." The five groups now employed are: (1) Very Susceptible, (2) Susceptible, (3) Susceptible-Tolerant, (4) Tolerant, (5) Resistant.

The present ratings of those varieties that have been tested in a sufficient number of trials to allow a reasonably accurate assessment of their resistance are as follows :

1. *Breeding Canes.*

Very Susceptible.	Susceptible.	Susceptible —Tolerant.	Tolerant.	Resistant.
28 N.G. 251	B. 40124	32 M.Q. 629	B. 35197	B. 37254
28 N.G. 219	B. 35247	B. 39250	B. 37226	B. 37256
28 N.G. 105	B. 2935	B. 41277	B. 38272	B. 39246
B. 35269	B. 39274	B. 4454	B. 39254	B. 40122
B. 44226	B. 41276	S.C. 12/4	B. 44131	B. 40123
	B. 44130	Kavangire	B. 41242	B. 4459
	B. 44227		B. 4864	B. 44132
	B. 49282		B. 48357	B. 44236
	32 M.Q. 657		B. 48361	B.H. 10/12
	Badilla		32 M.Q. 579	Ba. 11569
			Oshima	Q. 813
			Uba	Burma
				28 N.G. 7
				Dacca
				Kloet
				Local Co.
				Pasoeroan
				Raiatea
				Tobongo

2. *Potentially Commercial Varieties.*

Very Susceptible.	Susceptible	Susceptible —Tolerant.	Tolerant.		Resistant.	
		Barbados Seedlings.				
B. 34104	B. 40102	B. 37161	B. 37172	B. 47217	B. 3337	B. 48259
B. 4409	B. 4226	B. 41227	B. 40105	B. 47258	B. 4098	B. 48375
B. 4410	B. 4448	B. 4306	B. 41211	B. 47314	B. 4304	B. 4905
B. 4411	B. 44254	B. 43214	B. 4362	B. 47380	B 4373	B. 4906
B. 4466	B. 44279	B. 43229	B. 43391	B. 47397	B. 43253	B. 49122
B. 44244	B. 4504	B. 43349	B. 43413	B. 47399	B. 43330	B. 49257
B. 44341	B. 4553	B. 4506	B. 44111	B. 4847	B. 44182	B. 49355
B. 4502	B. 45151	B. 4572	B. 44165	B. 4851	B. 44278	B. 49376
B. 4608	B. 4691	B. 4604	B. 44269	B. 4867	B. 45188	B. 49380
B. 4692	B. 46369	B. 4699	B. 4530	B. 4881	B. 4668	B. 4945
B. 46281	B. 4733	B. 46230	B. 4534	B. 4888	B. 46116	
B. 47147	B. 4755	B. 46232	B. 4556	B. 4893	B. 46288	
B. 47233	B. 47306	B. 46339	B. 4596	B. 4895	B. 46290	
B. 47256	B. 47348	B. 46340	B. 45137	B. 48228	B. 46295	
B. 48125	B. 47419	B. 46351	B. 45152	B. 48231	B. 46308	
B. 48177		B. 4781	B. 45156	B. 48232	B. 46399	
B. 48179		B. 47179	B. 45270	B. 48372	B. 4710	
B. 48350		B. 47298	B. 4681	B. 48384	B. 4738	
B. 4968		B. 48351	B. 4688	B. 4942	B. 4743	
B. 49166		B. 4970	B. 46102	B. 4956	B. 4744	
B. 49186		B. 49301	B. 46103	B. 4966	B. 4746	
B. 49229		B. 49354	B. 46136	B. 4995	B. 4764	
B. 49353		B. 49377	B. 46144	B. 49197	B. 4765	
			B. 46150	B. 49309	B. 4788	
			B. 46151		B. 47151	
			B. 46190		B. 47162	
			B. 46218		B. 47214	
			B. 46248		B. 47225	
			B. 46293		B. 47262	
			B. 46297		B. 47379	
			B. 46378			
			B. 46384			
			B. 46394			
			B. 4711			
			B. 4724			
			B. 4747			
			B. 47135			
			B. 47204			
			B. 47216			
		Demerara Seedlings.				
D. 14/34	D. 36/43	D. 49/41	D. 26/39		D. 54/43	
D. 142/41	D. 39/43	D. 18/43	D. 158/41		D. 31/46	
D. 123/45	D. 51/43	D 10/44	D. 4/43		D. 49/46	
D. 6/46	D. 55/43	D. 27/45	D. 1/44			
D. 83/46	D. 58/43	D. 37/45	D. 3/44			
D. 150/46	D. 62/43	D. 173/45	D. 7/44			
	D. 27/44	D. 275/46	D. 132/45			
	D. 87/45		D. 170/45			
	D. 139/45		D. 2/46			
	D. 19/46		D. 3/46			
	D. 20/46		D. 9/46			
	D. 29/46					
		Other Canes.				
	Co. 419	Diamond 10	M. 213/40		M. 341	
		Co. 421	M. 423/41			
			P.O.J. 2878			

Chemistry of Resistance.

The Amino acid distribution in canes of different Leaf Scald reaction has been investigated by J. S. Robertson and J. F. Williams using a chromatographic method. Under certain conditions some relationship was obtained between Amino acid content and resistance, the more resistant varieties containing a higher concentration of amino acid than the more susceptible varieties. Further experiments are necessary before any definite conclusions can be drawn.

Leaf Scald Yield-Reduction Trials.

Two Yield-Reduction trials have been laid down, one at Sophia Experimental Station and the other at Pln. Skeldon. These trials should yield interesting information on the losses due to the disease in the field.

"RATOON STUNTING" DISEASE.

Dr. D. R. L. Steindl of Australia visited British Guiana in August in search of "Ratoon Stunting" disease. This virus disease causes severe stunting of ratoon crops in varieties which are susceptible to the disease. It was only on West Coast estates that Dr. Steindl observed symptoms suggestive of Ratoon Stunting Disease and then only on the variety B.4098. At Dr. Steindl's suggestion tests are being carried out at Pln. Uitvlugt to determine whether the symptoms are those of Ratoon Stunting disease or whether they may be attributed to soil conditions. Investigations into the Nutritional status of the affected fields are being carried out by Dr. H. Evans of Bookers Sugar Estates, Ltd.

"CHLOROTIC STREAK" DISEASE.

Chlorotic Streak continues to be found throughout the sugar estates. Robertson (1) found no reduction in yield due to the disease in British Guiana. Further tests on the effect of this disease on yield will be started shortly.

Reference :

(1) Robertson, J. S. Sugar Bulletin No. 20, 1951. Department of Agriculture, British Guiana.